SEPTEMBER 1995
Volume 63 No 9

AMATEUR RADIO

Journal of the Wireless Institute of Australia

Full of the latest amateur radio news, information and technical articles including:

* Review of ICOM IC-Z1A Dual Band Handheld
* An 80 m Direct Conversion Receiver
* Drew Diamond's Receiving Converter for 2 Metres

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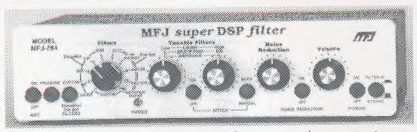

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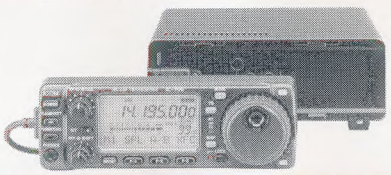

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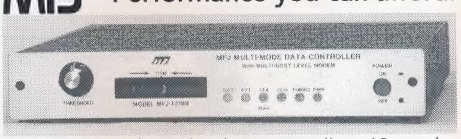

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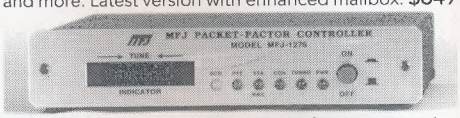

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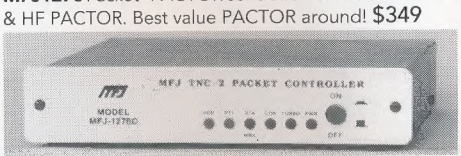

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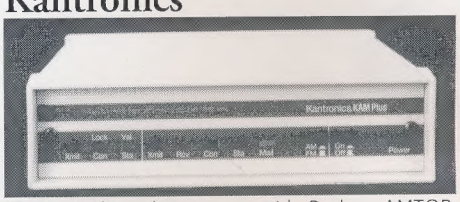

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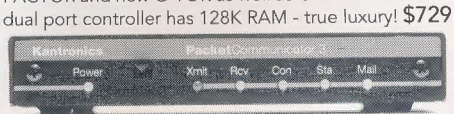

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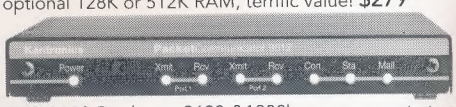

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Cover

Garry Herden VK5ZK, President of the WIA South Australian Division, presenting the G A Taylor medal to well known VHF/UHF enthusiast, Eric Jamieson VK5LP on Sunday, 28 May 1995. The medal was awarded to Eric in recognition of his long service (over 25 years) in writing the *VHF/UHF — An Expanding World* column for *Amateur Radio* magazine. The presentation ceremony took place in Eric's radio shack in front of Eric's wife Merna and three other members of the South Australian Division Council.

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A radiocommunication service for the purpose of self-training, intercommunication and technical investigation carried out by amateurs, that is, by duly authorised persons interested in radio technique solely with a personal aim and without pecuniary interest.

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Founded 1910

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Editor's Comment

Multiple Jubilees

By now everyone must know that World War II ended in Europe in May 1945, and in the Pacific in August, precipitated by the Hiroshima atom bomb on 6 August. Following on from this, the United Nations was established on 24 October in the hope that it could prevent World War III. So far it has succeeded, although with disastrous difficulty in places like Korea, Vietnam, the former Yugoslavia, several countries in Africa and Kuwait/Iraq. Not to mention smaller conflicts in Afghanistan, the Falklands, Chechnya and elsewhere.

None of these wars has made it necessary to restrict amateur radio in the way it was during WWII. As we have discussed before, we also celebrate in December the jubilee of our licences being returned to us in 1945.

Also of local interest in VK, we celebrate this month (September) the 50th anniversary of the last wartime duplicated typewritten copy of *Amateur Radio* in 1945, and the first post-war printed issue in October. I am indebted to Herb Stevens VK3JO for information about the magazine production during the war.

Our magazine goes back much further, to October 1933, when it began as an octavo size printed journal (about half the present page size) and continued every month until January 1941. One month was missed (February 1941) and the wartime duplicated newsletter (quarto, near A4 size) began in March 1941 with five pages and a printed cover. It would be gratifying to be able to say that February 1941 was the only missed issue, but Herb's statistics show that 51 issues were published from March 1941 to September 1945, a total of 55 months. So, four issues were missed during the war. Not a bad achievement considering the rather primitive duplicator, of which Herb has less than fond recollections!

From 1941 to 1956, Tom Hogan VK3HX was the editor, but as Victorian Division President during the war years, Herb Stevens was closely involved with producing *Amateur Radio.* He also helped with wrapping and posting for several subsequent years.

Callsigns of people responsible for *Amateur Radio* over this period were VK3s CR, HX, IE, IK, JB, JO, NY, OJ, TO, WQ and YS. Only three of these are still living (IK, JB and JO). The WIA owes them, their predecessors and their successors a debt of gratitude for maintaining our magazine for so long.

Bill Rice VK3ABP
Editor
ar

WIA News

WIA-SMA Liaison Team Changed

At the July Extraordinary Convention of the Federal WIA, the WIA's Spectrum Management Agency (SMA) Liaison team was reduced from six members to three in a majority vote of the Federal Council. The new team consists of Roger Harrison VK2ZRH, Neil Penfold VK6NE and David Wardlaw VK3ADW.

It is anticipated that Roger Harrison and David Wardlaw will attend all future WIA-SMA meetings, and WIA Federal President Neil Penfold will join them at meetings where his attendance is felt to be necessary. Anchor person for the team is Roger Harrison.

In reaching the decision, the Federal Council took into account amateur radio and Institute backgrounds, together with technical and administrative expertise and experience.

The Federal Council said that, where necessary, the expertise of other people should be called upon, for example Federal Technical Advisory Committee (FTAC) Chairman, John Martin VK3KWA.

A report on SMA Liaison matters in progress was also discussed by the Federal Council at the July Extraordinary Convention. Of 18 items to be actioned arising from the WIA-SMA meeting held in Canberra on 18 May, nine items had been completed, one item (concerning conditions for remote examinations) is still with the WIA to complete, and the remaining eight items had yet to be completed by the SMA as of the end of July. As matters are resolved, they will be advised in *WIA News*.

WIA Divisions

The WIA consists of seven autonomous State Divisions. Each member of the WIA is a member of a Division, usually in their residential State or Territory, and each Division looks after amateur radio affairs within its area.

Division	Address	Officers			Weekly News Broadcasts	1995 Fees	
VK1	ACT Division GPO Box 600 Canberra ACT 2601	President Secretary Treasurer	Rob Apathy Len Jones Alex Colquitt	VK1KRA VK1NLJ VK1AC	3.570 MHz LSB, 146.900 MHz FM each Wednesday evening commencing at 8.00 pm local time.	(F) (G) (S) (X)	$70.00 $56.00 $42.00
VK2	NSW Division 109 Wigram Street Parramatta NSW (PO Box 1066 Parramatta 2124) Phone (02) 689 2417 Freecall 1800 817 644 Fax (02) 633 1525	President Secretary Treasurer (Office hours e-mail address: wainsw@sydney.dialix.oz.au	Michael Corbin Pixie Chapple Peter Kloppenburg Mon-Fri 11.00-14.00 Mon 1900-2100)	VK2YC VK2KPC VK2CPK	From VK2WI 1.845, 3.595, 7.146*, 10.125, 24,950, 28.320, 29.120, 52.120, 52.525, 144.150, 147.000, 438.525, 1281.750 (*morning only) with relays to some of 14.160, 18.120, 21.170, 564.750 ATV sound. Many country regions relay on 2 m or 70 cm repeaters. Sunday 1000 and 1930. Highlights included in VK2AWX Newcastle news, Monday 1930 on 3.593 plus 10 m, 2m, 70 cm, 23 cm. The broadcast text is available on packet.	(F) (G) (S) (X)	$66.75 $53.40 $38.75
VK3	Victorian Division 40G Victory Boulevard Ashburton Vic 3147 Phone (03) 9885 9261 Fax (03) 9885 9296	President Secretary Treasurer (Office hours	Jim Linton Barry Wilton Rob Hailey Tue & Thur 0830-1530)	VK3PC VK3XV VK3XLZ	MONTHLY BROADCAST on the second Sunday of the month, starts 10.30 am. Primary frequencies 3.615 LSB, 7.085 LSB, and FM(R)s 146.700 Mt Dandenong, 147.250 Mt Macedon, 147.225 Mt Baw Baw, and 2 m FM(R)s VK3RMA, VK3RSH, VK3ROW. 70 cm FM(R)s VK3ROU and VK3RGL. Major news under call VK3WI on Victorian packet BBS.	(F) (G) (S) (X)	$72.00 $58.00 $44.00
VK4	Queensland Division GPO Box 638 Brisbane QLD 4001 Phone (074) 96 4714	President Secretary Treasurer	Geoff Sanders Lance Bickford Rodger Bingham	VK4KEL VK4ZAZ VK4HD	1.825, 3.605, 7.118, 10.135, 14.342, 18.132, 21.175, 24.970, 28.400 MHz. 52.525 regional 2m repeaters and 1296.100 0900 hrs Sunday. Repeated on 3.605 & 147.150 MHz, 1930 Monday	(F) (G) (S) (X)	$72.00 $58.00 $44.00
VK5	South Australian Division 34 West Thebarton Road Thebarton SA 5031 (GPO Box 1234 Adelaide SA 5001) Phone (08) 352 3428	President Secretary Treasurer	Garry Herden Maurie Hooper Charles McEachern	VK5ZK VK5EA VK5KDK	1820 kHz 3.550 MHz, 7.095, 14.175, 28.470, 53.100, 147.000 FM(R) Adelaide, 146.700 FM(R) Mid North, 146.900 FM(R) South East, ATV Ch 34 579.000 Adelaide, ATV 444.250 Mid North Barossa Valley 146.825, 438.425 (NT) 3.555, 7065, 10.125, 146.700, 0900 hrs Sunday	(F) (G) (S) (X)	$72.00 $58.00 $44.00
VK6	West Australian Division PO Box 10 West Perth WA 6872 Phone (09) 351 8873	President Secretary Treasurer	Cliff Bastin Mark Bastin Bruce Hedland-Thomas	VK6LZ VK6OO	146.700 FM(R) Perth, at 0930 hrs Sunday, relayed on 1.825 3.560, 7.075, 14.115, 14.175, 21.185, 28.345, 50.150, 438.525 MHz. Country relays 3.582, 147.350(R) Busselton 146.900(R) Mt William (Bunbury) 147.225(R), 147.250(R) Mt Saddleback 146.725(R) Albany 146.825(R) Mt Barker broadcast repeated on 146.700 at 1900 hrs.	(F) (G) (S) (X)	$60.75 $48.60 $32.75
VK7	Tasmanian Division 52 Connaught Crescent West Launceston TAS 7250 Phone (003) 31 9608	President Secretary Treasurer	Andrew Dixon Robin Harwood Terry Ives	VK7GL VK7RH VK7ZTI	146.700 MHz FM (VK7RHT) at 0930 hrs Sunday relayed on 147.000 (VK7RAA), 146.750 (VK7RNW), 3.570, 7.090, 14.130, 52.100, 144.150 (Hobart) Repeated Tues 3.590 at 1930 hrs	(F) (G) (S) (X)	$69.00 $55.65 $40.00
VK8	(Northern Territory is part of the VK5 Division and relays broadcasts from VK5 as shown received on 14 or 28 MHz).						

Note: All times are local. All frequencies MHz.

Membership Grades
Full (F) Pensioner (G)
Needy (G) Student (S)
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Three-year membership available to (F) (G) (X) grades at fee x 3 times.

■ Receivers

VK6 80 — An 80 m Direct Conversion Receiver

Peter Parker VK1PK (ex VK6BWI) supplies all the information needed to build a simple, but effective, receiver, ideal for beginners.*

The **VK6 80** is a basic direct conversion receiver which will allow you to receive signals on the amateur 3.5 MHz (80 metre) band. For a $30 outlay you can construct this rig which can pick up WIA news and Morse practice broadcasts in addition to general amateur activity. All components required to build this receiver are available over the counter in retail quantities and only simple tools are needed to complete the project.

Circuit Outline

This receiver is of the direct conversion type. The incoming signal is combined with a signal produced by the beat frequency oscillator in the mixer. The product of this mixing is a third signal which is amplified and fed to the speaker. The frequency of the third signal is equal to the frequency difference between the incoming signal and the signal from the beat frequency oscillator. In simple terms, the receiver converts signals whose frequencies are above the 20 kHz limit of human hearing (such as 3.5 MHz transmissions from radio amateurs) to frequencies we CAN hear. The receiver consists of a number of stages, each performing a different function. This can be represented in the form of a block diagram, such as that shown in Fig 1.

Circuit Description

Now refer to the schematic diagram, Fig 2. This shows what is contained in each block and is useful for construction and troubleshooting. The desired signal is fed via the 33 pF capacitor to the anode of D1, the 0A95 mixer diode. Also present at D1 are dozens of other signals which have been attenuated by the tuned circuit formed by L1 and VC1. The desired signal, however, is not attenuated by the tuned circuit.

TR2, a BC548, is the set's beat frequency oscillator which produces a signal for the mixer. The frequency of this signal is determined by VC2, L2 and associated capacitors. As VC2 can be varied in capacitance, the receiver can tune a range of signals from 3.500 to 3.650 MHz.

The mixer combines the received signal with the signal generated by the beat frequency oscillator to produce an audio frequency signal which is within human hearing range. TR1 and IC1 amplify the signal enough to drive the speaker. The 5 kΩ variable resistor acts as a volume control, an essential item if you intend to use the set with headphones.

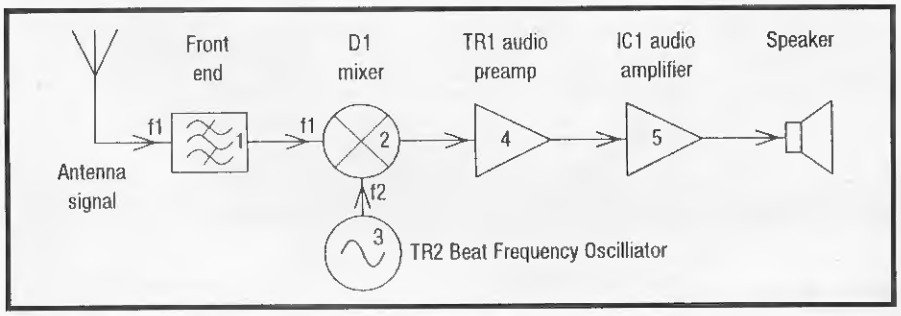

Fig 1 — Block diagram of the VK6 80.

Construction

Tools required:-
15-30 watt soldering iron
wire cutters
wire stripper
long nose pliers
screwdrivers
hand or electric drill
multimeter (analogue or digital).

To build this receiver you will need to know how to solder. If you have no experience in electronic soldering, it is suggested that you get some practice before commencing this project. The receiver is built on two pieces of blank matrix board; one for the beat frequency oscillator and the other for the mixer/audio stages. The board consists of plastic insulating material punched with many small holes for component leads to pass through. The components sit on top of the board and are anchored by their soldered leads below the board (see Fig 3).

In the prototype, the BFO board measured 35 by 50 mm while the mixer/audio board was 50 by 90 mm. These sizes are not critical, but avoid overcrowding. To house the receiver a metal box is required. A good size case is 25 cm by 7 cm by 5 cm, but this is not critical if there is enough front panel space for all the controls and sufficient room inside for the electronics.

There are several ways to procure such a box. They are:-

1 Buy a ready made box.

2 Build your own from sheet aluminium or PC board material.

3 Use a loaf tin. Loaf tins are readily available from the large chain stores, and are ideal for this and other projects when a cheap, ready made case is required. Avoid the non stick type as the coating is a poor conductor. Other sources for these useful enclosures are swap meets and op-shops.

Once you have your enclosure, start mounting the variable capacitors, 5 kΩ pot, switch, headphone socket, external power connector and antenna socket. The last two are mounted on the rear panel and the rest are on the front.

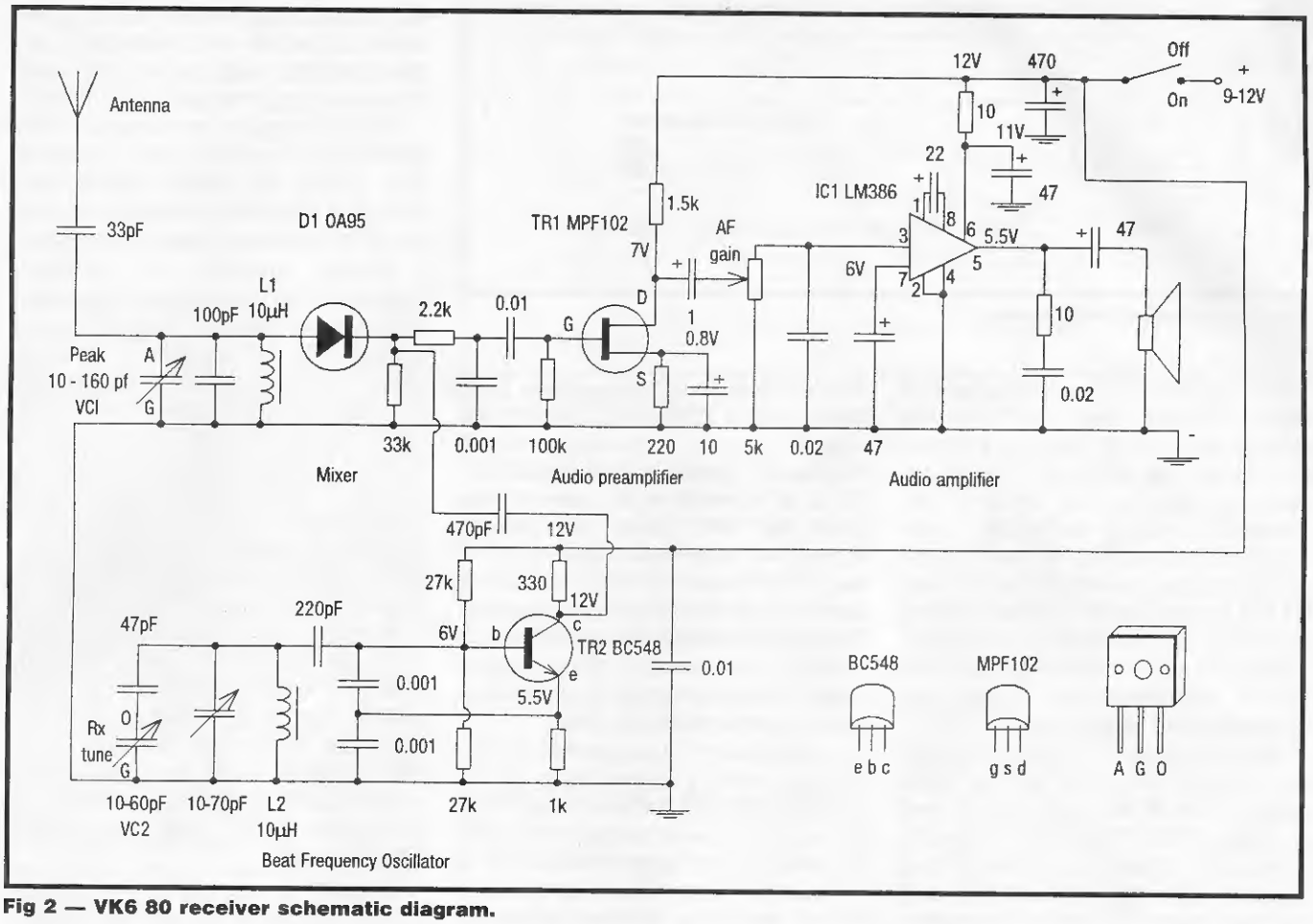

Fig 2 — VK6 80 receiver schematic diagram.

If you choose to glue the two variable capacitors to the front panel, ensure that the glue is kept away from the two screw holes on VC1 and VC2. Now instal a metal partition between the BFO tuning capacitor and the rest of the front panel controls. The purpose of this is to electrically isolate the BFO (which determines the receiver's frequency of reception) from the rest of the receiver.

With the matrix board available, consider how it should be mounted and cut it to size. If matrix board stock of the size you require is not available, you can purchase a printed strip board (sometimes known as Veroboard) and place it in ferric chloride printed circuit board etchant until the copper has been etched away. Ferric chloride solution easily stains clothes and is poisonous, so handle it with care.

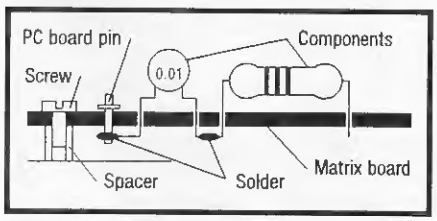

Fig 3 — Mounting of components on the matrix board.

Before starting on wiring the two boards, install the two fixed capacitors behind the front panel. The first of these is the 470 µF electrolytic capacitor which is wired in parallel with the power connections to the receiver. More specifically, the positive lead is soldered to the on/off switch and the negative lead connects to earth (negative(-)) via the earth connection on the headphone socket. The other capacitor involved is the 100 pF across the "G" and "A" terminals of VC1.

Firstly wire up the mixer/audio pre-amp/AF amplifier board, working from the LM386 stage back to the 2.2 kΩ resistor. Remember to observe polarity in the case of TR1, the AF gain control, the 1 µF tantalum capacitor and all electrolytic capacitors (see page 8 for more information).

Check your wiring and, if satisfied, connect the speaker or a pair of headphones between earth and the 47 µF electrolytic. Insert the IC into its socket, taking note of the polarity, and apply between nine and twelve volts power. Place your finger on the free end of the 2.2 kΩ resistor and listen for any noise or hum from the speaker. The hum should disappear, or nearly so, when your finger is removed and its loudness should be controllable with the AF gain (volume) control. Should you hear nothing as you touch the 2.2 kΩ resistor, touch pin 3 of the IC. If nothing is heard, there is a problem in the LM386 circuit, but if there is a noise, the problem is around TR1. In a correctly functioning audio stage the hum from touching the resistor is louder than the hum from touching pin 3 of IC1; this proves that TR1 is amplifying.

Assemble the rest of this board, taking note of the diode's polarity.

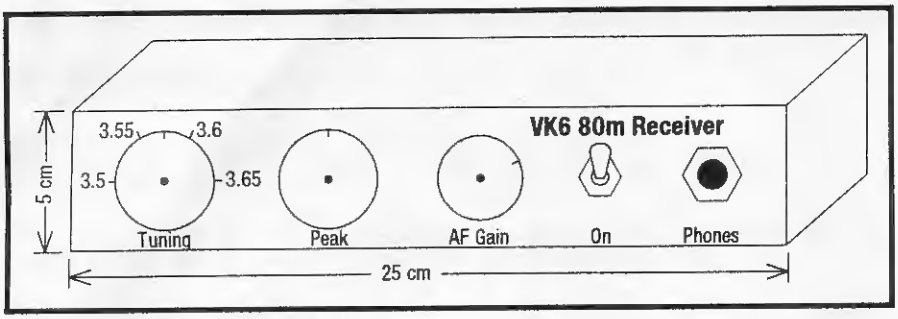

Fig 4 — Layout of front panel.

When mounting L1, use printed circuit board solder pins to facilitate experimentation by making it easier to convert the receiver to another band by altering the value of L1. Some RF chokes are liable to be damaged by excessive heat, so do not hold the soldering iron on the joint for too long. Diodes, transistors and tantalum capacitors can also be heat damaged, so the use of a heat sink clip is recommended if you are inexperienced at soldering.

After completion, place this board to one side and start on the BFO board. Use PCB pins for L2 and ensure that TR2 is properly connected. Check your wiring and connect VC2, the +12 volt line and the free lead of the 470 pF capacitor to the BFO board. Also ensure that the earth connection on the board is attached to the metal box. This can be achieved by use of a solder lug and a nut and bolt. Make the lead from the board to the lug as short as possible.

Now check again for short circuits and wrong connections and, when satisfied that the receiver has been wired correctly, measure the current consumption. To do this set your multimeter to the DC current range of not less than 100 mA, set the switch to the off position and place the positive (red) probe on the battery + terminal. Once you have put the negative (black) probe on the positive lead of the 470 μF electrolytic capacitor, a crackle from the speaker should be heard and the current consumption, typically 20 mA, should be indicated on the meter.

To test if the BFO is working, apply an RF probe to the collector of TR2 to check the BFO output. The next task is to align the BFO so that it tunes the correct band of frequencies; in this case from 3500 kHz to about 3650 kHz. The simplest way to do this is to use a digital frequency counter and adjust the 10-70 pF trimmer with a screwdriver until the BFO tunes the desired range. An alternative method is to align the receiver with the aid of received signals of known frequency. These signals may be generated by a RF signal generator. Alternatively a crystal oscillator using a cheap 3.58 MHz crystal could be used.

At this point it is suggested that an outdoor antenna be erected to get the most out of your receiver. A suitable antenna can be as simple as a piece of wire of any length fed out of a window to the top of the nearest tree. Never erect the antenna above or under power lines and ensure that, should your antenna blow down, it will not endanger public safety. To minimise noise pick up, avoid running your wire parallel to the power lines if at all possible. If you intend to gain an amateur licence soon, put up an antenna which will work well for transmitting, such as an 80 metre dipole or, for those with less room, a G5RV. Information on the above two antennas plus others can be found in the ARRL or RSGB handbooks which, if too costly to purchase, can be ordered through your local library.

Before operating the receiver, adjust VC2 to the approximate centre of the band (around 3580 kHz) and adjust VC1 for maximum received noise with the antenna connected. Signals can now be tuned with VC2, but some practice will be required to tune in single sideband voice signals easily. On some receivers adjustments of VC1 alter the received frequency slightly, so VC1 can act as a fine tuning control to make tuning easier. The reason this happens is that there is no isolation between the BFO and the mixer. Such isolation, essential when the BFO is used in a transmitter, is provided by a buffer amplifier, which was considered by the designer to be an unnecessary complication for a simple receiver as the effect of VC1 was not thought objectionable.

Should a separate fine tuning control be desired, it can be included by adding a small variable capacitance in parallel with VC2. If this modification is performed, the 10-70 pF trimmer must be readjusted to compensate for the extra parallel capacitance.

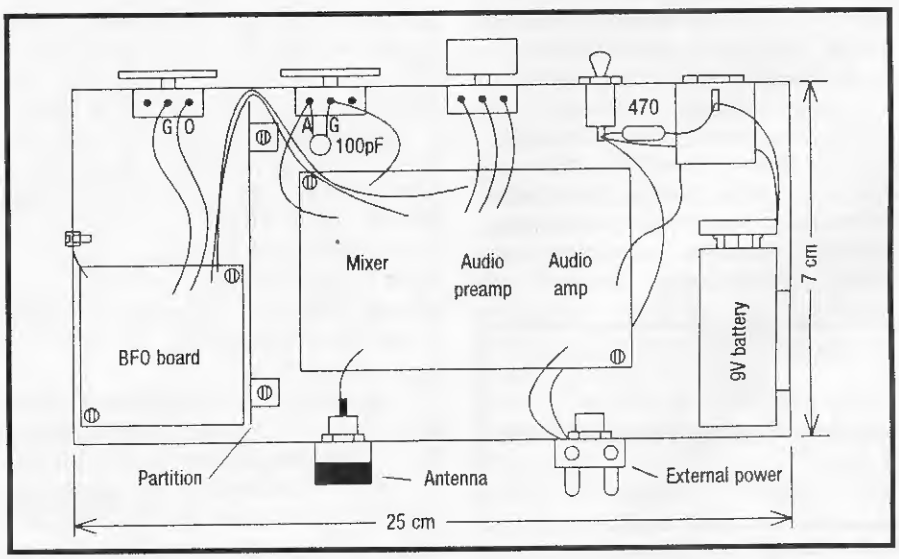

Fig 5 — Layout of components inside case.

One other modification is to fit an internal speaker, if there is enough room inside the box. To do this, the headphone socket should be one that includes a switch, so the speaker is switched in when the headphones are unplugged from the socket, and the speaker is disconnected when the headphones are in use.

Troubleshooting

Should your receiver fail to work, you must initially check all connections and component polarities. If you find a transistor misconnected, unsolder it and test it before reinserting it correctly, for the wrong polarity may have damaged the transistor. If in doubt, use a brand new replacement. If the above proves fruitless, compare the voltages at various points of the circuit and compare the measurements with those shown on the schematic diagram.

If there is a major discrepancy at any point, the surrounding components should be removed and tested. Capacitors can be short circuited, so should be measured for resistance, which should be very high (no less than many MΩ). However, electrolytic capacitors can have less resistance and still be sound. It is suggested that, because of the low cost of ordinary resistors and capacitors, new components be used, as this will make it less likely that the receiver will refuse to work due to a faulty component. The main savings on projects such as these accrue from the use of salvaged cases, hardware, switches and the like, as these are the most expensive components.

What can be heard on this receiver depends on the time of day, the state of the ionosphere and your antenna. Eighty metres is a night time band, so there is very little, if any, activity during the day time. The best time for listening is generally between 7.30 pm and 10.00 pm. During this time, the receiver should easily be able to receive signals up to about 500 km away with occasional reception of more distant operators if conditions are good. There is also regular activity on Sunday morning, but signals drop as the morning progresses, until 10.30 am or 11.00 am when nothing can be heard, except noise.

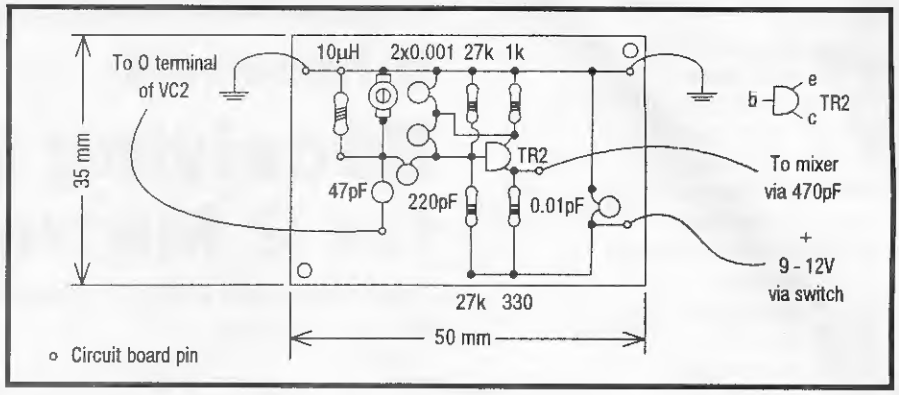

Fig 6 — BFO board.

This receiver, being simple, has its limitations (particularly an inability to separate closely spaced stations) but, once its tuning has been mastered, it should provide many evenings of enjoyment.

Thanks are due to James McBride VK6FJA for testing the original prototype.

Parts List VK6 80 receiver

Resistors

2 10 Ω 0.25 watt
1 220 Ω 0.25 watt
1 330 Ω 0.25 watt
1 1 kΩ 0.25 watt
1 1.5 kΩ 0.25 watt
1 2.2 kΩ 0.25 watt
2 27 kΩ 0.25 watt
1 33 kΩ 0.25 watt
1 100 kΩ 0.25 watt
1 5 kΩ variable resistor

Inductors

2 10 µH RF chokes

Semiconductors

1 OA95 germanium diode
1 BC548 NPN transistor
1 MPF102 FET
1 LM386 audio IC

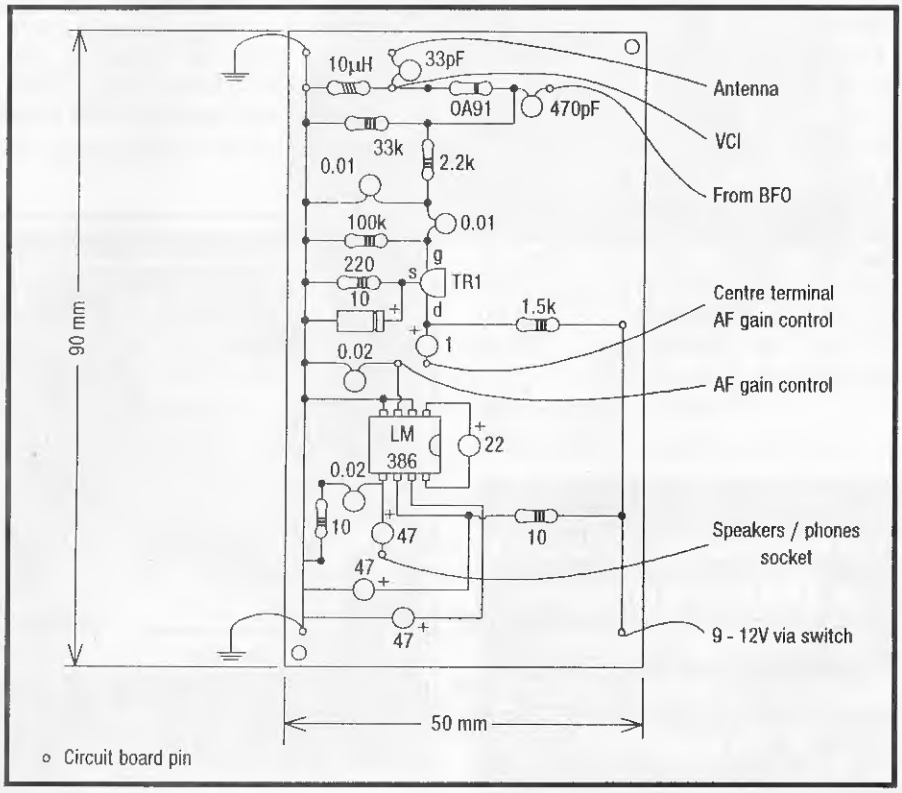

Fig 7 — Mixer/audio board.

Capacitors
1 33 pF disc ceramic
1 47 pF disc ceramic
1 100 pF disc ceramic
1 220 pF disc ceramic
1 470 pF disc ceramic
3 0.001 μF disc ceramic
2 0.01 μF disc ceramic
2 0.022 μF disc ceramic
1 1 μF tantalum
1 10 μF electrolytic
1 22 μF electrolytic
2 47 μF electrolytic
1 470 μF electrolytic
1 10-70 pF trimmer capacitor
2 60-160 pF variable capacitor

Miscellaneous
1 case (see text)
1 SPST (or SPDT) switch
1 knob (to fit 5 kΩ variable resistor)
1 speaker (8 Ω)
4 spacers (metal or plastic)
8 screws (to fit spacers)
4 screws (to mount VC1, VC2)
1 8 pin IC socket (for LM386)
1 RCA socket (for antenna)
1 RCA plug
1 two way terminal block (for power)
1 3.5 or 6.5 headphone socket
1 9 Volt battery snap
Perforated circuit board

A Note About Component Values

Except for all fixed capacitors in the BFO circuits, the values of the resistors and capacitors used in the **VK6 80** are not critical and can vary by up to 10% from the specified value without impairing performance. The capacitors in the BFO must be of specified value, but the trimmer capacitor may have a maximum capacitance of between 60 and 80 pF. Both RF chokes must be 10 microhenries.

*7/1 Garran Place, Garran ACT 2605

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Remember to leave a three second break between overs when using a repeater.

■ **Receivers**

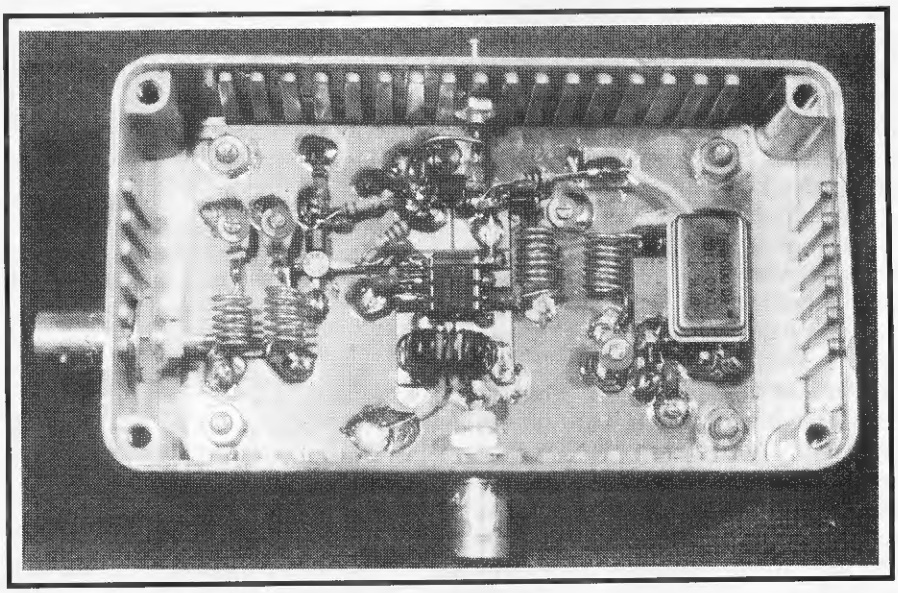
Receiving Converter for 2 Metres

Drew Diamond VK3XU describes yet another excellent project for you to build.*

According to the Signetics/Philips data sheet, the NE602 balanced mixer IC can handle signals to 500 MHz. Having played with the NE602 in HF receiving and transmitting projects, I thought it would be instructive to see how effectively the chip may be applied to a VHF job. It is some years since a 2 m converter has been described in these pages (*see* References *below*), so perhaps it is timely to offer plans for a relatively simple converter to access this interesting band.

Most HF general coverage receivers tune from about Broadcast to maybe 30 MHz. If we wish to receive signals on higher frequency bands, the usual approach is to precede the receiver with an appropriate converter. To tune from 144 to 146 MHz, for instance, we could use a 116 MHz oscillator crystal and mixer to "frequency-convert" the required band down so that it may be tuned from 28 MHz (144 minus 116) to 30 MHz (146 minus 116).

For this project there has been a deliberate attempt to employ "off the shelf" components, and to keep the circuit as simple as is reasonably possible consistent with satisfactory performance and ease of duplication. I have no ready access to equipment for measuring noise figure. Suffice to say, however, that a 0.05 microvolt CW signal from a (laboratory grade) generator plainly stands out from the internally generated noise, and even a 0.02 microvolt signal can be perceived. The biggest annoyance on 2 m appears to be the powerful pager signals operating near the amateur band, in and near the cities. I believe some of the transmitters are only about 10 km from here. However, apart from the odd appearance of pager type signals of equivalent sub-microvolt strength near 144.7 MHz, there have been few instances of



The complete converter.

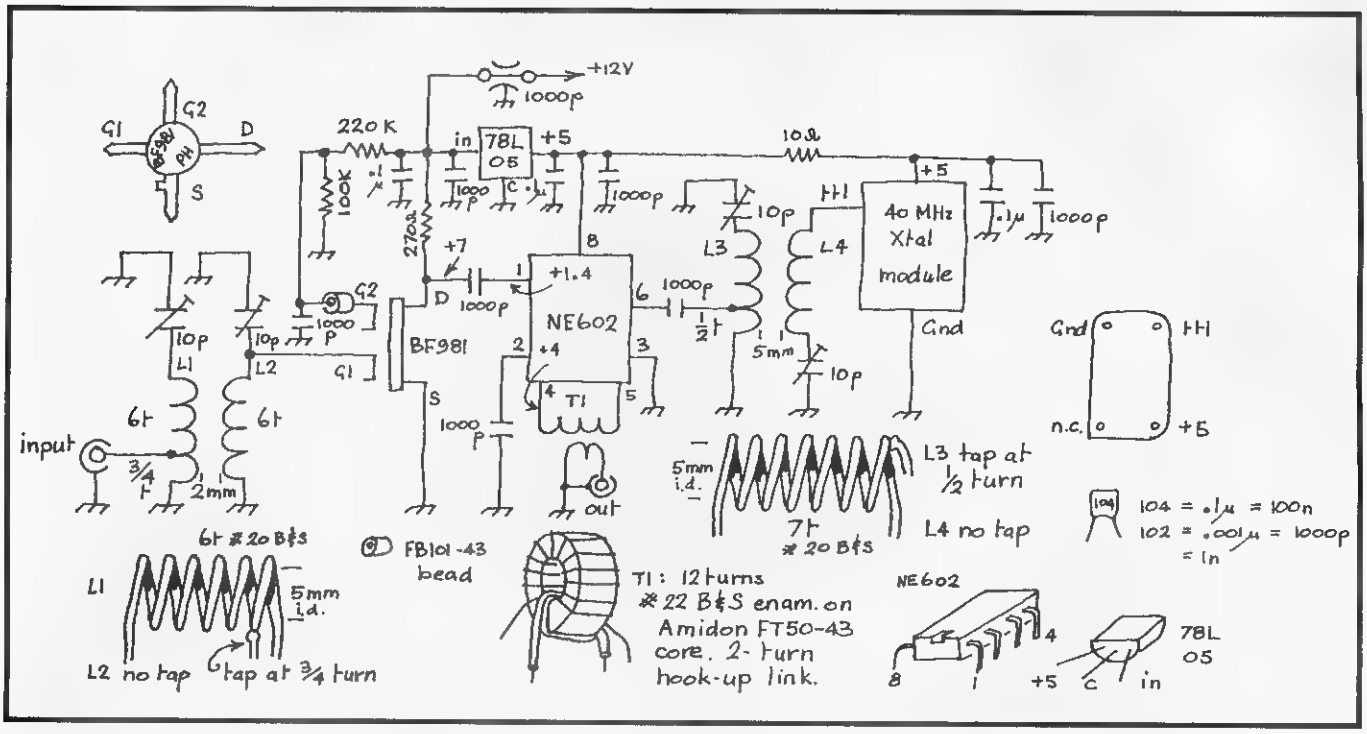
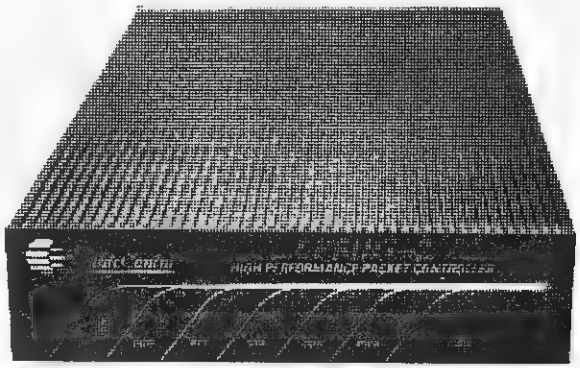


Fig 1 — Circuit diagram of the receiving converter for 2 metres.

SPIRIT-2 High Performance Packet Controller



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harmful interference observed. So, whilst it cannot be claimed that this circuit is "bomb-proof", it does an admirable job considering the low cost and relative simplicity.

Circuit

The circuit is greatly simplified by using a 40 MHz crystal oscillator module (of the type intended for computer applications) for the local oscillator. A series tuned tank, L4, at the TTL square-wave output of the oscillator selects the 3rd harmonic at 120 MHz, where a second coupled 120 MHz tank, L3, cleans up the LO signal, which is then applied to the oscillator port of the NE602 balanced mixer. The 120.000 MHz signal thus obtained is quite acceptably stable, accurate and spectrally pure. Harmonically-related components at 80 and 160 MHz measured about −40 dB down on the wanted 120 MHz signal. IF at 24 MHz (to receive 144 MHz) is extracted via the broad band matching transformer T1 connected between output pins 4 and 5 of the NE602.

For the RF amplifier, dual-gate FET devices type 3N204, MFE131, NTE222, 40673 and BF981 were tried, and proved by experiment to be satisfactory. However, in practice, the BF981 gives the lowest noise. These are reasonably priced and available (*see* Parts *below*). To improve immunity to out of band signals, a double tuned circuit band-pass filter was found necessary at the front end at L1 and L2. The NE602 is an active mixer with a published NF of 5 dB, so we only need a moderate amount of gain to improve this figure. Note that the drain circuit of the BF981 is untuned. The more usual tuned arrangement gave too much RF gain and, although bench tests with a signal generator yielded spectacular sensitivity, "on-air" the amount of gain obtainable by tuning the drain made the circuit rather too susceptible to overload from pager signals.

Construction

A meld of "paddyboard" and "ugly" was used for the prototype. A board size of about 54 x 90 mm is suggested (please do not be put off by this construction method, and the non-availability of a ready made circuit board — the plain circuit board approach is quite appropriate to a project of this kind). The NE602 is soldered to a small substrate pad board which, in turn, is soldered or glued centrally to the main board. The oscillator module may also be mounted upon a small substrate, where the pad for the TTL output should be fairly small to avoid capacitive loading. Or the crystal module may simply be inverted "dead bug" fashion upon the main board.

All connections and component lead lengths should be as short as is reasonably practicable. By-pass and coupling capacitors must be either ceramic, ceramic chip or monolithic types. Take care when soldering monolithic capacitors! Too much heat for too long may unsolder the lead from the actual component. It is recommended that the completed converter board be housed in a die-cast or aluminium box with coax connectors to suit your set-up. Tuning holes are not required.

The BF981s are shipped in foil. During bread-boarding, my own little collection of these devices survived being soldered in and out of circuit

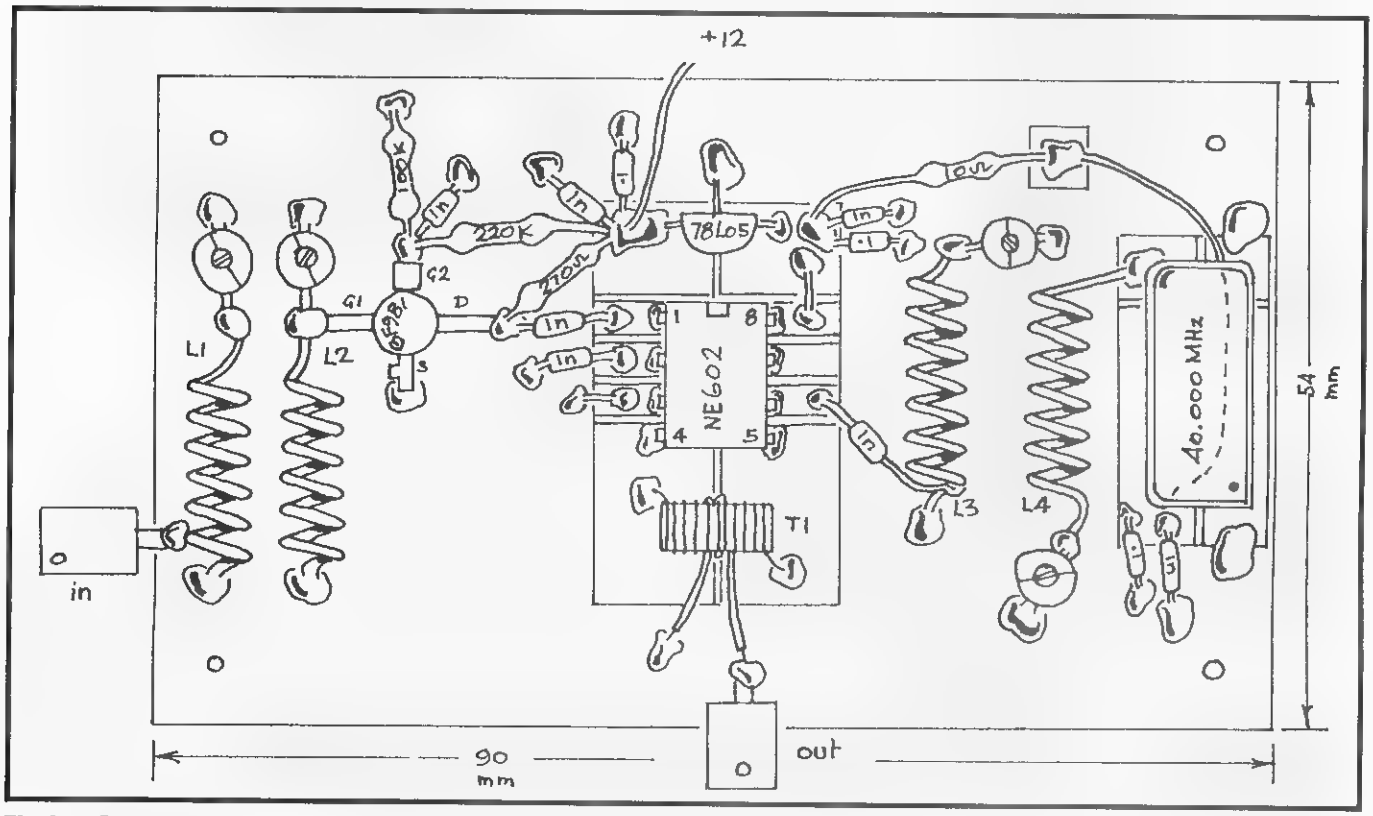


Fig 2 — Board layout for the receiving converter for 2 metres.

many times. So, under normal circumstances, I don't think we have to be paranoid about static electricity (according to the data book they have internal protection diodes at each gate). However, make sure that your soldering iron is properly earthed before starting work. Note that the drain lead of the BF981 is the longest, and that the source lead has an additional little identifying tag.

The filter coils were wound using the shank of a 5 mm drill to obtain correct internal diameter. Use #20 B&S (0.81 mm) tinned or enamelled copper wire spaced at about wire diameter between turns, six turns for each of the input coils, and seven for each of the LO filter coils. To avoid the possibility of tuning up on a wrong band, use variable trim capacitors with a maximum capacitance of 10 pF. Observe that the rotor of the trimmers (which connects to the slotted ferrule) is the lead soldered to the circuit board foil.

For the output transformer T1, wind about 12 turns of #22 B&S (0.63 mm) enamelled wire on to an Amidon FT50-43 toroidal core spread to occupy about 2/3rds of the circumference. The link is two turns of ordinary hook-up wire wound in the gap.

Tune-up

It is possible to get the converter going entirely without fancy test equipment. With a coax cable, connect the output of the converter to the input of your general coverage receiver which should be tuned to about 24 MHz and set to receive SSB or CW. Apply +12 Vdc supply to the converter rail. Background noise should increase a little. Check that the 78L05 is supplying +5 V to the NE602 and oscillator module. If you have a diode RF probe and matching voltmeter, apply the probe to the tap on L3 of the 120 MHz filter. To get a meaningful indication, the probe and its ground connection must be very short (ie the ground connection must also be a probe type, not a flying clip lead). Peak the two 120 MHz tank trimmers for maximum output, which should be about 200 mV occurring at about the 80 % capacitance point (ie 8 pF) for each trimmer. When the 120 MHz LO signal is peaked, you should hear an increase in background noise as the mixer begins functioning. Squeeze the coil turns a little closer together if the trimmers won't quite make it.

Wind the coils on a 5 mm drill.

Connect a 2 m antenna to the input. As a prelude, adjust the two input trimmers for maximum noise, which should occur at about 5 pF each. Tune to a (preferably beacon or Morse practice) signal. To make tune-up easier, temporarily weaken the signal by (perhaps) turning the antenna away from the signal or, much more preferably, by inserting a stepped attenuator between the antenna and the converter input which is switched for a signal level that just exceeds the internal noise level. Now adjust the input trimmers for what you consider best signal strength at lowest noise. Maximum signal and maximum noise will probably occur at different points, particularly for the second tuned circuit. Aim for best signal at lowest internal noise.

Troubleshooting

To help in any necessary troubleshooting, voltages are shown on the schematic. There have been one or two circuits published which show ambiguous pin-outs for the BF981 making it possible to reverse G2 and source leads. Check again that you have the source as the tagged lead, the drain as the long lead and so on. BF981 drain voltage should be about +7 V. G2 should have a ferrite bead installed to discourage parasitic oscillation. Check voltages around the NE602A — a badly wrong voltage at any pin would be a vital clue.

Parts

The BF981, Amidon core, NE602AN and most passive components are available from Stewart Electronics [(03) 543 3733] and Truscotts Electronic World [(03) 723 3860]. Not least, check out the WIA SA Division Equipment Supplies Committee — you can obtain a price list by writing to PO Box 789, Salisbury, SA 5108. The 40 MHz crystal oscillator module was purchased from Rod Irving Electronics [(03) 543 2166], and is also available from Rockby Electronics [(03) 562 8559]. If you have genuine problems in obtaining any of these components, I have a few spares. Drop me a line (SASE please) should you need any of these. Disclaimer:- apart from being an ordinary customer, the writer has no connection with any company mentioned herein.

References and Further Reading

1. *VHF-UHF Manual: Jessop — RSGB.*
2. *Using the BF981 in 2 M Preamps: McDonald, VK2ZAB — AR June '84.*
3. *Two Metre Receiving Converter: Hepburn, VK3AFQ — AR Oct '84.*
4. *VK5 Low-noise 2 M Preamplifier: Maitland, VK5ZAW — AR Feb '85.*
6. *Modern VHF/UHF Front End Design: White, G3SEK — Rad Comm April through July '85.*
7. *Low-noise 144 MHz Pre-Amplifier using Helical Tuned Circuits: Dobricic, YU1AW — VHF Communications Vol 19, number 4/87.*
8. *Pre-amplifier — Pros and Cons: Dobricic VHF Comms Vol 19, number 4/87.*
9. *NE602 Primer: Carr — Elektor Electronics Jan '92.*
10. *Small Signal FET Data Book — Philips.*

11. *Australian Amateur Radio Call Book and AR Sep '94 (list of 2 m beacons).*

Parts List

Capacitors	Qty
10 pF trim cap	4
1000 pF or 820 pF monolithic	7
1000 pF feedthrough	1
0.1 μF monolithic	3
Resistors	
10 ohm 1/8 W	1
270 ohm 1/8 W	1
100 kΩ 1/8 W	1
220 kΩ 1/8 W	1
Semiconductors	
BF981	1
NE602AN	1
78L05 +5 V chip	1
Miscellaneous	

40 MHz crystal module, FB101-43 bead, FT50-43 toroidal core, metal box, coax connectors to suit, double sided circuit board material for main board and scraps for paddyboards, #20 B&S wire, #22 B&S enamelled wire, hook-up wire, screws, nuts, solder, and enthusiasm (1 oz).

45 Gatters Road, Wonga Park, VIC 3115

WIA News

Novice Privileges Revised

The five amateur radio Technical Licence Specifications (TLSs) originally gazetted on 2 June 1995 were gazetted again on 5 July. The TLSs gazetted earlier are now out of date. The only change apparent seems to have been to the Novice licence.

Novice licensees are now permitted to use digital modes on both the 80 m and 10 m bands.

Copies of all the TLSs are available free for the asking from your local Spectrum Management Agency Area Office. Novices are permitted eight additional modes on the 3.525-3.625 MHz and 28.1-28.6 MHz bands, which covers the popularly-used narrow-band radioteletype (RTTY) and packet radio transmission modes.

It is understood that these changes reflect the original intention of the SMA regarding Novice operating privileges.

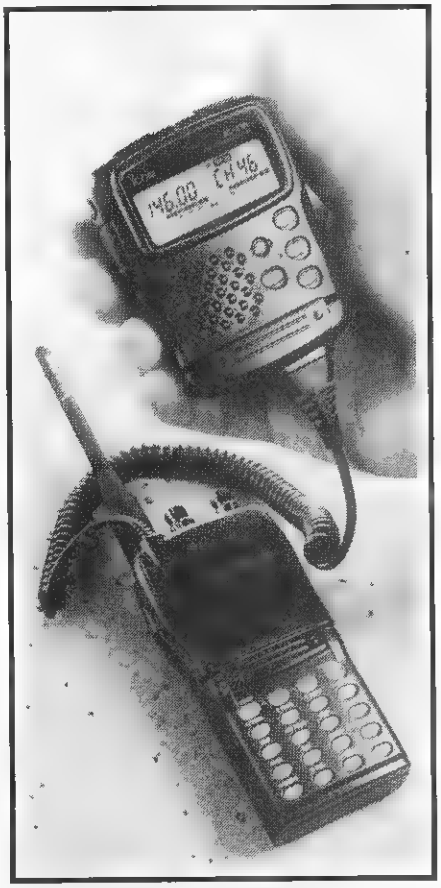
Equipment Review

ICOM IC-Z1A Dual Band Handheld Transceiver

*Reviewed by Paul McMahon VK3DIP**

What Is It?

The IC-Z1A is a dual band (2 m and 70 cm) handheld transceiver, with up to five watts of transmit output power on both bands, plus a wide coverage receiver with a nominal range of 50 MHz to 1 GHz. The unit is of mid size (57 x 36 x 125 mm) and has a solid feel (380 g). The review unit was kindly supplied by ICOM and had the serial number 01091. Recommended retail price is $1131.17.



First Impressions

The first thing I noticed about this handheld was that it coincidently had the same serial number as an IC-2GXAT which I reviewed last year. Perhaps ICOM always uses the 1091st handheld produced for reviews, perhaps all ICOM handhelds have the same serial number, or perhaps I should just buy a Tatts ticket.

Enough with the metaphysical, on with the review.

ICOM claims that this is the first of a new generation of handhelds in that it is the first dual-band handheld with a removable remote control panel. The idea is that the upper part of the front control panel, including the display, can be detached from the body of the radio. This remote control panel comes with an extension cable and lapel clip. It provides a full functional display (that is, the normal display) of all operations, including bands and frequencies, plus control of operating modes, volume, tuning, scanning, band selection, ON/OFF and PTT, but not the numeric keypad, or the squelch level. It can be backlit for night operation.

Basically the idea is the same as the removable front panel found on a number of mobile VHF/UHF boxes these days. I'm not too sure how well the idea transfers to the handheld, however, so perhaps it will also be the last of its generation.

The problems here, I foresee, involve two main areas. Firstly, the contacts connecting the display and the rest of the handheld, despite ICOM obviously going to great lengths and, probably, expense to fit a spring loaded, gold plated, water resistant, connector. I still can't help but worry about the life of these contacts given the environments that people use handhelds in, and the repeated use as people swap backwards and forwards each time they need a speaker mic. Secondly,

in order to get everything that you would want on the detachable bit, several compromises have been made. The most annoying one I found was the placement of the PTT which, when not detached, is on the side of the handheld as usual but placed towards the front, rather than being in the middle. This has the effect of making the handheld feel fat and could lead to people with shorter fingers having some difficulty in using it.

Forgetting the detachable panel for the moment, the unit comes in standard foam packaging, complete with rubber-ducky antenna, panel extension cord, charger, and 700 mAh nicad pack. It also includes an instruction manual, and quick reference card.

Apart from the compromises on the detachable panel, the remaining ergonomics of the radio are reasonably good. Each band has a separate concentric tuning/squelch knob set, and display section, with its own LCD S-meter. Simultaneous receive on both bands, or full duplex (Tx on one band while Rx on the other) is possible. Also offered is the so called V/V and U/U ability, where it is possible to have the two bands both on VHF or both on UHF. This can be very useful if you have, say, two 2 m repeaters that you wish to monitor simultaneously.

The top of the set has the standard BNC connector for the antenna, as well as the normal ICOM speaker/mic connector and a power-cum-charging socket.

The 60 page instruction manual has, as is unfortunately usual these days, little in the way of technical detail. This manual, while explaining how to do most of the things that this radio can do, does not mention a number of the extras that are possible. For instance, the US press release mentions a standard VHF Rx range of 136-174 MHz which is keyboard modifiable for 118-136 AM. There is no mention of how to do this in the manual nor, for that matter, was I able to find it by trial and error.

I did, however, work out what one extra feature in the SET menus did. This item was labelled PLCE and, as I discovered, controlled frequency entry via the keyboard. In default mode the first digit pressed was the MHz (eg 6675 on VHF gave 146.675 MHz). By changing the place variable in SET you could have five or six digits as the entry string. This is especially necessary when using the wide range Rx capabilities of the set. Any other way of moving around just takes too long. There was no mention of this place variable in the manual. Perhaps the manual was written before the actual radio was finished.

Technical Bits

Despite what the manual says, the Rx frequency coverage of this radio seems to be basically 50-1000 MHz (VHF 50-300, UHF 300-999 MHz), though not at all well at many points in the spectrum. The Tx does seem to be as advertised at 144-148 and 430-440 MHz. More on this later. No circuit diagram was provided so, as usual, any real technical details are restricted to what small amount is in the manual and things that I could manage to measure from the outside.

As far as the bits from the manual are concerned, we find that it has a dual conversion superhet with a 43.1 MHz and 35.8 MHz first IF on VHF and UHF respectively, with both bands using a 455 kHz second IF. Sensitivity for 12 dB SINAD is claimed as less than 0.16 μV except when using the V/V or U/U feature, when less than 0.32 μV is stated (that is when using both halves of the set on the same band).

The tests detailed later confirm this as the case, at least in the relevant ham bands. Selectivity is on a par with other similar boxes, as is spurious and image rejection. While only claiming more than 180 mW audio output, I must admit to the subjective feeling that it was producing much more with very clear and clean sounding audio. For the Tx the rated power outputs were 5, and 0.5 Watt, with 15 mW (all when driven from 13.5 V) also selectable. This low, low power could also be automatically selected when low battery voltage was detected.

As far as memories and extras are concerned, this set has a total of 104 user programmable memories, each with the neat feature of a six character alpha-numeric display. Typically this could be used to store the callsign of the repeater or, perhaps, some other note to remind you of what it is.

The memories are arranged as 46 regular and three pairs of scan edge memories per band. The six character display can also be used in conjunction with the paging and selective call functions to transmit and receive text messages such as the callsign of the calling party. Ten receive and ten transmit memories are available for this purpose so that, given a matching handheld at the other end, you could come back after being away from your handheld and see who had called you. I personally feel that this sort of feature is nice but perhaps more suited to a more "commercial" version rather than an Amateur Service one.

All the usual scan features are present, as are the pager and code squelch functions, but it should be noted that they only work on one band at a time, and they do limit the effectiveness of the receiver duty cycle power saver modes. Speaking of the power saving, the supplied

A. J & J COMAN ANTENNAS

6M std 6 ele 40 mm boom	$216
2M co/linear 2 5/8 7dbd	$ 97
12 ele 2M broad B/width	$135
160M vert top loaded	$327
6 M co/lin 6 dbd rad 4.NEW	$157
6 ele 6 M N.B.S 50 mm Boom	$310
Duo 10-15 M	$295
3 ele 15 M	$199
3 ele 20 M	$333
20 m log-yag array 11.5 dbd	$755
M B Vert NO TRAPS 10-80 M	$265
Tri band beam HB 35 C 5 ele	$690
40 M linear loaded 2 ele	$516
13-30 M logperiodic 12 ele all stainless/steel fittings	$951
70 cm beam 12 ele bal/Feed	$102
23 cm slot fed 36 ele brass cons s/solder-assembled. 18 dbd	$170
80 m top load/cap/hat vert.	$260
3 ele 40m l/lcap hats 60mm boom	$860
2 m 144.100 2.2 wavelength boom	$145

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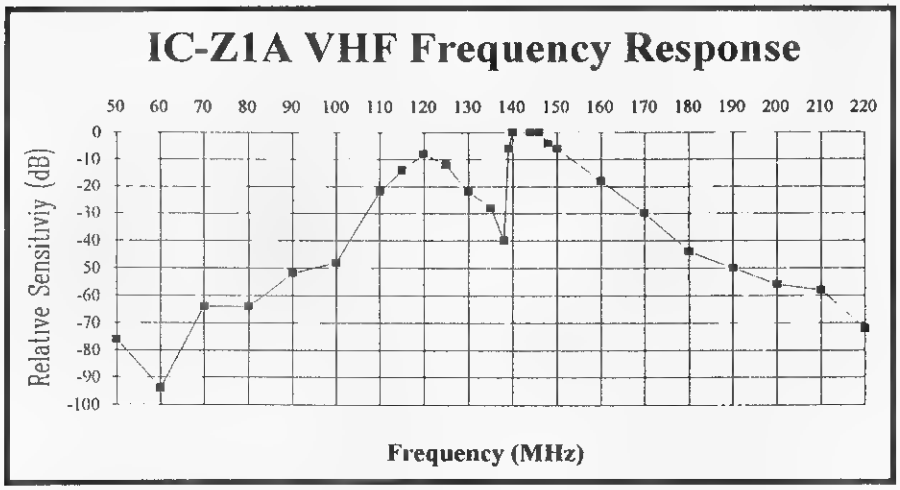
nicad pack is a 700 mAh 4.8 V unit which is claimed to provide some five hours and 50 minutes of use when using VHF only (in a 1:1:8 Rx:Tx:Power Saver type ratio) and some four hours and 20 minutes in similar conditions with UHF. The supplied charger will supposedly charge the nicads in some 15 hours, and you can expect some 300 recharges out of the battery pack. A one hour fast charger is available as an option; however, this may reduce the life of the pack.

I would probably invest in the optional dry cell pack, and just use the slow charger. This brings us to the display and its ability to tell you the voltage of the pack. This is a very useful feature. although the manual notes *"the battery indication is only for your reference and may not be accurate".*



IC-Z1A VHF frequency response.

The set can operate in so called V/V and U/U mode as well as normal dual band. This can be useful when you want to listen to one conversation while monitoring another frequency waiting for a call. You do, however, need to be a bit careful here as receive sensitivity on both channels will be affected, the secondary by about 6 dB and the primary by about 2 dB as, shown in my tests.

Don't buy stolen equipment — check the serial number against the WIA Stolen Equipment Register first.

Tests

The results noted below are more or less limited to the VHF side of the set, more because of the available test equipment rather than anything else. I feel, however, that, based on "on-air" performance, they are probably representative of the UHF band as well.

The LCD S-meter had a strange quirk. While it is probably the most linear (or should that be logarithmic?) I have ever come across, it did have the strange effect that, when opening the squelch on an unoccupied frequency, the reading increased from none to one little square! The display has eleven of these little squares with each one being close enough to a one dB increase in signal level. How these effects are achieved will have to stay a mystery as no circuit details are provided.

The VHF receiver performance is shown in the accompanying graph.

For these tests the set was configured for monoband operation. A test at 146 MHz confirmed that the V/V option second 2 m frequency is 6 dB down on the prime; also in this mode the prime is 2 dB down on normal operation.

As can be seen, the receiver is really only useable in the amateur band and perhaps around 120 MHz. This also was born out in "on-air" tests with broadcast FM stations only just being there, local CFA traffic on 160 MHz being unusable, and no sign of a nearby 6 m repeater. Similarly, on UHF, while mobile phone signals were detectable, you had to be in a pretty ideal location to have reliable reception. Within the 2 m and 70 cm ham bands though, the unit was everything you could ask for. Perhaps the manual was correct after all in not mentioning the possibility of out of band receive.

Operation

In general operation the set was pretty much as you would expect from ICOM. The audio quality was particularly good, and frequency setting, etc, once you had the hang of it, pretty straight forward. There are some problems with the ergonomics due to the detachable front panel as mentioned before, but on the whole it is a quite useable box.

One thing that disappointed me was the manual which, even with the 60 odd pages, didn't satisfy my requirements for something I may have just paid over $1000 for. In particular, there were things that the radio could obviously do which were just not mentioned. ICOM is not, of course, alone in this. It seems to be the industry norm these days.

I believe that there is a really good opportunity for some ham to enjoy their hobby and to make money too, by filling this void. It's now done as a matter of course with every new piece of software that is produced. Several people test it out and write the book, which invariably is better that the supplied manual.

Conclusion

I didn't like the detachable panel idea though, perhaps for some, it will be just what they wanted. Likewise, I don't think it is really a wide band receiver. I also think that the pricing of this box is a little steep, considering that the US RRP is $US600 (approx $AUS830) and that dual-band handhelds with similar or better features are currently on sale from at least one local vendor at $AUS699.

**47 Park Avenue, Wattle Glen VIC 3096*

Operating

1995 Remembrance Day Contest Opening Address

This year's Remembrance Day Contest Opening Address was delivered by Mr J C (Ces) Williams RAN (Retd), Chairperson, Commemorations Committee, "Australia Remembers", New South Wales.

Born at Homebush, New South Wales on 8 July 1928, Ces was educated at Marist Colleges Lidcombe and Parramatta, joined the RAN as an Ordinary Seaman in February 1946, saw service in Korea, Malaya and Vietnam, and commanded two RAN Ships, HMA Ships Curlew and Acute. Ces is married and has four sons, all of whom joined the Navy.

He resigned from the RAN in July 1975 at the rank of Lieutenant Commander and spent years in the Merchant Navy as Third, Second and First Mate.

In 1977 he joined the Maritime Services Board of New South Wales as Tug Master and, during the next eleven years, held the positions of Regional Inspector, Senior Regional Inspector, Marine Safety Officer, Acting Superintendent Marine Survey and, finally, Deputy Harbour Master. He retired at the end of 1988.

The Opening Address

"I consider it an honour for the opportunity to deliver the opening address to the 1995 Remembrance Day Contest as a tribute to the sacrifices made by Australian Radio Amateurs in the service of this great country of ours.

This year has been designated "Australia Remembers" and, as well as remembering all who enlisted in the armed forces during World War Two, we are indebted to the Radio Amateurs who, armed with their expertise, provided a most valuable extension of service within the Navy, Army and Air Force and therefore maintained the lines of communication when most needed.

We commemorate those who became Coast Watchers in the Pacific areas of operations and passed on intelligence to the allies regarding enemy shipping movements, and also those who operated behind enemy lines in Europe. In both theatres of operations, where operations were detected, they paid for their loyalty and skills with their lives.

Today, of course, we celebrate the great advances in radio which can be largely attributed to the Amateur Radio operators. The industry of today is far removed from that of 1939. Because of the development of satellite radio, operators are now able to communicate on international frequencies more clearly with sets of greater efficiency and much smaller construction.

Ces Williams, Chairperson, Commemorations Committee, "Australia Remembers", New South Wales.

The development of radar during World War Two gave the allies a tremendous advantage over the enemy and contributed in no small manner to the final victory in 1945.

Education for persons displaying a keen interest in radio is now more readily available but is more complex and covers far greater fields than in the past. However, the industry is well served, and will continue to be, whilst ever people of the calibre of radio enthusiasts maintain their interest.

Whilst ever the Radio Amateurs continue to foster their fraternal attitude with other Radio Amateurs throughout the world and exchange technical data, friendships are formed which in turn make a significant contribution to harmonious international relations and is therefore the legacy enjoyed today.

In this year of "Australia Remembers", it is appropriate that all Radio Amateurs who lost their lives and all those who were wounded as a result of their war service be remembered. Also the widows and children of "those who did not return" or have since passed on from this world due to disabilities caused during that time. It is with great respect and affection that we say "Lest We Forget".

Let us now celebrate this, the 1995 Remembrance Day Contest which I have much pleasure in declaring open."

WIA News

New WIA Members

The WIA bids a warm welcome to the following new members who were entered into the WIA Membership Register during the month of July 95.

L30912	MR A COLE
L30913	MR E TULLER
VK3LEN	MR L HENSON
VK3XHV	MR B STRAEDE
VK5EX	MR A T MCDADE
VK5GC	MR G C COOK
VK5MAC	MR S C MCMANUS
VK5NOT	MR J T BURFORD
VK6MOT	MR T J HEANEY
VK6TTV	MR B G PILCHER
VK7ZSP	MR S COURTNEY-PRATT
VK8NSM	MR S C MITCHELL
ZL1WTV	MR M R BISHOP

Technical

Technical Abstracts

*Gil Sones VK3AUI**

TRF Receiver

An interesting TRF receiver was described by C F Fletcher G3DXZ in the May and June 1995 issues of the RSGB's magazine *RadCom.* The articles covered what the author described as a 1-T-1 Receiver. This was in line with the description of valve TRF receivers as 1-V-1 receivers. The significance of this description is that the receiver consists of an RF amplifier followed by a regenerative detector and an audio amplifier stage.

The RF amplifier in this case is untuned and is used to isolate the regenerative detector from the antenna. This overcomes the problem of stray radiation from an oscillating regenerative detector and isolates the regenerative stage from loading by the antenna.

The circuit is shown in Fig 1 and the parts list in Table 1. Alternative regeneration control options are shown in Fig 2. The arrangement of Fig 2a is intended only as an initial setup. With Fig 2a, find the voltage at point A which gives the onset of oscillation. Then connect Fig 2b and adjust RV3 to give this voltage at point A with RV4 set to mid range. This will provide a sufficient range of adjustment and will provide a low impedance voltage source at point A which will assist in the smooth operation of the regenerative detector. The reason for this setting-up is that the FET characteristics cover a fairly wide range.

A dual band coil switching circuit is shown in Fig 3. The 47 k resistor is used to trim the gain of the lower frequency coil so that operation on both bands is similar. The value may need to be trimmed. Some experimentation may be needed to duplicate the coils. However, the main idea is to have coverage of the bands you want with the particular tuning capacitor and coil cores you are using.

The bands covered are 1.8, 3.5, 7, and 10 MHz. VC1 is the Bandset capacitor and VC2 is used for fine tuning. Some careful adjustment of the regeneration and the front end attenuator RV1 will be needed to achieve best performance. For CW and SSB the detector must be just oscillating. Best sensitivity is found on the brink of oscillation.

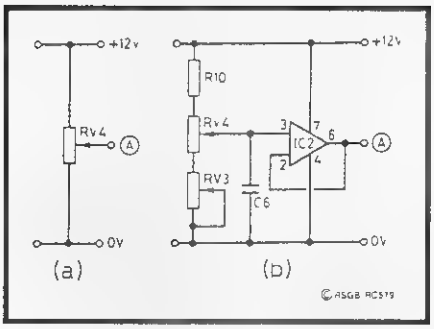


Figure 2 — Regeneration Control Options.

9600 Baud Packet

The performance of a number of transceivers handling 9600 baud data was tested in the May 1995 issue of the ARRL magazine, *QST.* The article was written by Jon Bloom KE3Z, ARRL Senior Engineer. Also in the same issue, a review of the Azden PCS-9600D 440 MHz voice/data transceiver by Steve Ford WB8IMY, Assistant Managing Editor, provided similar data. The information is of interest to anyone contemplating 9600 baud packet.

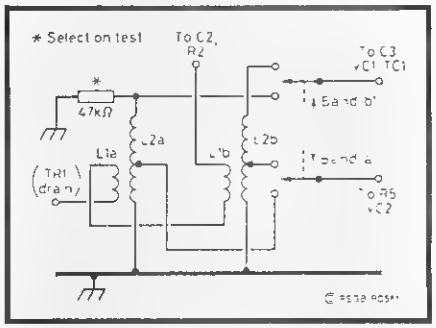


Figure 3 — Dual Band Coil Switching.

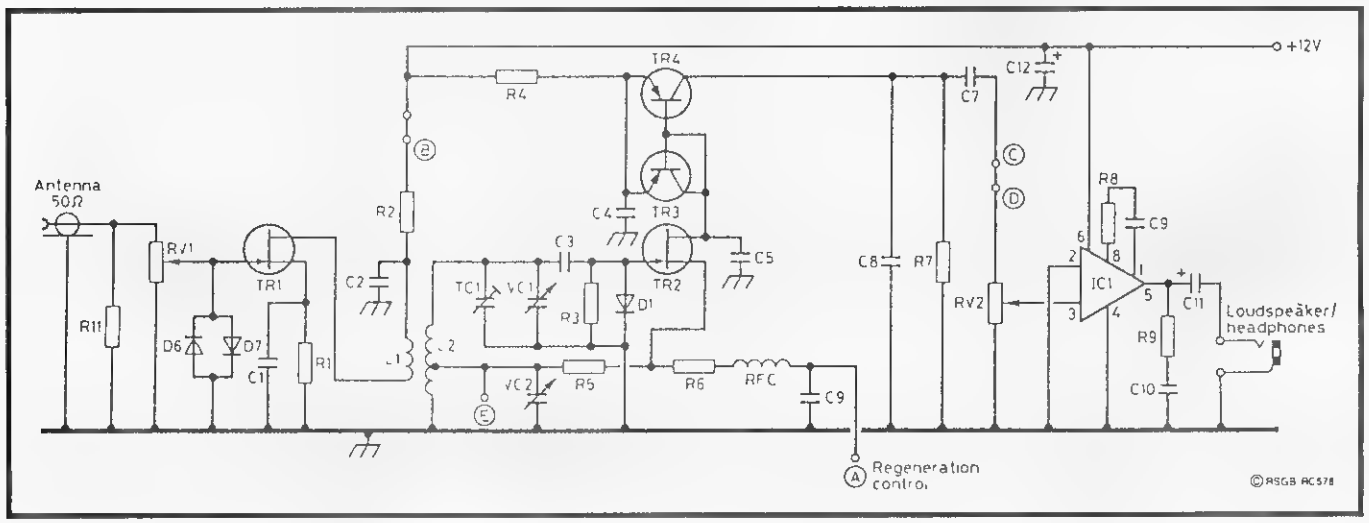


Figure 1 — "1-T-1" TRF Receiver.

Table 1

Resistors

All Fixed Resistors are 1/4 W or 1/2 W Carbon.

R1	330R
R2, R8	470R
R3	100R
R4	1k
R5,R6	2k2
R7,R12	47k
R9	10R
R10	33k
R11	56R
R16	8k2
RV1	47k Log
RV2	47k Preset
RV3	4k7 Lin

Capacitors

C1,C5	22nF 63 V Polyester
C2	100nF 63 V Polyester
C3	100pF 63 V Polycarbonate
C4,C12	47μF 16 V Electrolytic
C6	2μ2F 16 V Electrolytic
C7	330nF 63 V Polyester
C8	4n7F 63 V Polyester
C9	10μF 16 V Electrolytic
C10	47nF 63 V Polyester
C11	220μF 16 V Electrolytic
VC1	270pF Air Tuning Capacitor
VC2	15-50pF Ceramic Trimmer
VC3	30pF Air Tuning Capacitor

Inductors

Tuning coils wound on Ferromagnetics T50/2 iron dust toroidal cores.

L2a (1.74 MHz) 78 turns, tap 30 turns, 30 SWG

L2b (4-10.2 MHz) 34 turns, tap 13 turns, 24 SWG

L1a 10 turns over earthy end L2a

L1b 5 turns over earthy end L2b.

RFC 330 μH

D1, D6, D7	1N4148
TR1,TR2	2N3819
TR3,TR4	BC558
IC1	LM386
IC2	LM741

In general, 9600 baud operation is considerably more difficult than the usual 1200 baud VHF/UHF operation. This is reflected in the results obtained in the tests. If you are actively involved in 9600 baud work, or contemplating such operation, then I would recommend obtaining a copy of *QST,* May 1995.

The results obtained are contained in Table 2. The BER or Bit Error Rate may be unfamiliar to readers. The BER is a measure of the performance of a digital communication circuit. It is simply a measure of the number of bits which are sent through the system incorrectly. A packet contains around 1000 bits so, if the BER is around 1 x 1000, the system will be just about unusable. If the BER is 100 times better at 1 error per 100,000 bits, then the system will be much better and you may not notice the losses.

In Table 2, the only radios meeting the BER of <1 x 10 were the ICOM IC-820H, Azden PCS9600D, and the TEKK KS-900. The TEKK is a specialised UHF data transceiver made in the USA.

Modulation Hum

An old problem has revisited us. Modulation hum was a common problem for valve broadcast and short wave radios. The causes were explored thoroughly in the *Radiotron Designers Handbook* edited by F Langford Smith and solutions suggested. This book was a major reference for radio designers from the mid 1930s till the late 1950s while radio receivers were a big local industry. The handbook was sold around the world.

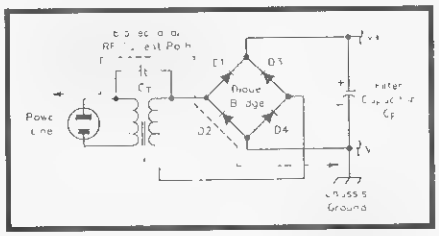


Figure 4 — Hum modulation signal path. The capacitor CT is the interwinding capacitance.

In the April 1995 issue of *QST,* an article entitled "An HF Hum Interference Mystery Solved!" by Lyle Russell Williams KC5KBG appeared which discussed modulation hum. The hum appears when signals are being received using the AC mains wiring either accidentally or intentionally as part of the receiver antenna and earth circuit. The effect of superimposing the mains frequency hum on the received signal is due to non-linearity in the signal path. This can occur in the rectifier in the power supply.

The signal path is shown in Fig 4. The use of plug-pack type supplies,

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23 cm On The Move!

Melbournians currently have two 23 cm repeaters to use (1273.15 or 1273.4 + 20 MHz offset). If you are looking for a quieter band, the opportunities are now there. Better still, product has been sourced to promote the band at prices that will even surprise the bargain hunters. Those in other states stand by, moves are afoot so that you can join the action as well. We'll keep you posted in future columns.

IC-765 Demo Unit...A High Performance Opportunity.

Speak to an IC-765 owner and they rave about the performance of these Icom units. So here's a terrific opportunity. We have a demo unit available at $4,500...the new price is $7,585! Call me and I'll arrange everything with your nearest dealer.

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Table 2 — 9600 Baud Performance

	Receiver				Tranmsitter	
	12 dB SINAD level (dBm)	BER at 12 dB SINAD	BER at 16 dB SINAD	BER at -50dBm	BER at 12 dB SINAD	BER at 12 dB SINAD +30 dB
2 m FM Radio						
Icom IC-281H	-113.2	$4.8x10^{-4}$	$<1x10^{-5}$	$<1x10^{-5}$	$7.4x10^{-3}$	$1.1x10^{-3}$
Kenwood TM-251A	-114.3	$3.6x10^{-4}$	$1.3x10^{-5}$	$<1x10^{-5}$	$2.2x10^{3}$	$2.9x10^{4}$
Standard C-1208DA	-108.8	$3.9x10^{-4}$	$1.7x10^{-5}$	$<1x10^{-5}$	$3.7x10^{-3}$	$7.0x10^{4}$
Yaesu FT-2500M	-113.3	$8.6x10^{4}$	$<1x10^{-5}$	$<1x10^{-5}$	$4.9x10^{-3}$	$3.8x10^{-4}$
2 m/70 cm Multimode						
Icom IC-820H	-113.0	$2.7x10^{-4}$	$<1x10^{-5}$	$<1x10^{-5}$	$5.1x10^{4}$	$<1x10^{-5}$
70 cm Data Radio						
Tekk KS-900	-110.4	$2.6x10^{-4}$	$<1x10^{-5}$	$<1x10^{5}$	$3.8x10^{-4}$	$<1x10^{5}$
70 cm FM Radio						
Azden PCS-9600D	-113.0	$2.8x10^{-4}$	$<1x10^{-5}$	$<1x10^{-5}$	$5.9x10^{-4}$	$<1x10^{-5}$

or transformers without screening, leads to the signal being coupled to the diodes in the bridge and the signal to the receiver ground being chopped or modulated by the AC. The earth from a three core mains lead may be at a fairly high RF impedance and so may not be an effective RF shunt.

The signal causing the problem is that picked up on the mains lead and is called a common mode pickup. The signal may be reduced by winding several turns of the mains lead through a toroid or around a ferrite rod. This reduces the amount of signal which can be modulated by the rectifier diodes. The antenna and signal earth system may need to be improved also.

Antenna systems using coaxial cable are less likely to be affected as the signal has a much better RF return. The signal pickup on the mains will exert less influence.

C/o PO Box 2175, Caulfield Junction VIC 3161

■ Operating

UN50

Peter Hughes VK6HU, National JOTA Co-ordinator, has extracted the following from the World Scout Bureau JOTA circular 10/95.*

The special logo designed to promote the scout activities linked with the UN50 program.

The United Nations organisation is celebrating its 50th anniversary this year. Several activities are being organised to celebrate this anniversary which is on 24 October, two days after JOTA.

The World Organisation of Scout Movements, WOSM, with headquarters at the World Bureau in Geneva, co-operates with several UN agencies in different parts of the world. The World Scout Committee decided to pay tribute to this relationship and has linked two large Scout events to the UN anniversary. They are the World Jamboree in the Netherlands (PA6SWJ) in August, and Jamboree-on-the-Air (AAnaa -ZZnzz!) in October. A special logo has been designed to promote these activities and is included on the international JOTA Participation Card.

Three **UN50** initiatives have been organised for the 38th JOTA. Firstly, scout stations will operate from several UN premises with UN officials present at their various locations. Secondly, the special stations will transmit a message from the different UN agencies offering their views on World Scouting and JOTA. And finally, three projects are being offered to scouts taking part in JOTA. These

consist of a game, identification of a problem and a discussion on the problem for which points for discussion are given. The three projects are Nature and Environment, Education and Health, and Relief Operations.

Participating Groups may choose any or all of the projects. The games are for the younger sections and the discussion part is aimed at the older scouts.

It is expected that preliminary discussion and suggestions will be undertaken before JOTA and that the thoughts and ideas which are developed will be discussed with other radio counterparts during JOTA. It is expected that scouts will soon discover their views differ from those living in other towns or other parts of the world. But, as everyone is concentrating on the same three projects, it should be easy to compare each other's point of view.

Each member country has established a national committee for the celebration of the 50th anniversary of the UN. The National UN Association will have details.

58 Preston Street, Como WA 6152

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WIA News

Good Publicity for Amateur Radio

The Channel 10 television network's nationally broadcast "Healthy, Wealthy and Wise" lifestyle program generated some good publicity for amateur radio on 17 July. The program was repeated the following weekend.

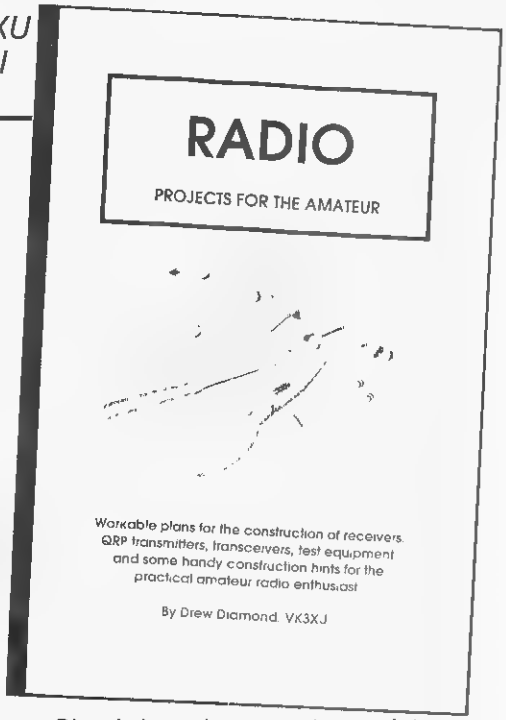
A segment on communicating covered letter writing and pen pals, electronic mail and amateur radio. Veteran radio amateur Ron Fisher VK3OM talked about how he'd made many friends through the hobby. The segment included good visual shots of Ron at his equipment, along with his tower and beam antenna and the Institute's journal, *Amateur Radio*.

Ron told viewers wanting to know more about the hobby to contact the Wireless Institute of Australia, which resulted in a number of telephone enquiries in the days following the program.

Book Review

Radio Projects for the Amateur

Author — Drew Diamond VK3XU
Reviewed by Gil Sones VK3AUI


RADIO
PROJECTS FOR THE AMATEUR
Workable plans for the construction of receivers, QRP transmitters, transceivers, test equipment and some handy construction hints for the practical amateur radio enthusiast
By Drew Diamond VK3XU

Radio Projects for the Radio Amateur is a fascinating book in that it collects such a range of projects and practical construction together in one publication. Drew Diamond VK3XU is a very enthusiastic home brewer and has produced very many projects which can be duplicated with only a basic workshop and using very readily available parts.

The sections of the book concerning basic workshop techniques are excellent. Drew shows how to make things with only basic tools and materials which are easy to obtain. You will not need to find special parts suppliers and specialist tool suppliers. There is also a very practical list of the suppliers that Drew has used to produce the projects. Even the second-hand and disposals type parts are readily available and simple to obtain.

A wide variety of projects is presented and you can choose from receivers, transmitters, and transceivers, all providing a useful level of performance and without a great deal of complication. All the projects have been built by Drew with the aim of making them easy to duplicate. They are all designed to be easy to build for a beginner.

As well as the receivers, transmitters, and transceivers there are items of station equipment. The book includes power supplies and some items of basic useable test equipment, such as a dip meter, bridges, and a power meter and dummy load.

One interesting item is an article on making your own air-wound inductors. These are now hard-to-find items and Drew shows you how to make your own using only the most basic tools and materials.

Circuit boards are not mandatory for these projects and layouts are given for boards that you can make yourself, if you wish. Drew tells you how to make boards and provides several alternatives to the use of circuit boards for projects of this type.

The book is a fascinating collection of projects built by a true home-brewer, for other home-brewers ranging from the rank beginner to the most experienced. The photographs have suffered in the reproduction process but are quite adequate to illustrate the projects. All the projects are "goers" and have been duplicated by others. It is a most impressive collection and deserves a place in your ham shack.

The book has been self published by Drew Diamond VK3XU and is available from Daycom Communications Pty Ltd. The price is $18.50 over the counter and $20 including post and packing. The book will also be obtainable from Truscotts Electronic World.

■ Antennas

Efficiency of the Z Match

Lloyd Butler VK5BR tests the efficiency of the Z Match Tuner over a wide range of antenna load conditions*

Introduction

In past issues of *Amateur Radio* I have tabled a lot of measurement data on the performance of Z match tuners including the range of load resistance that can be matched. However, in retrospect, measurement of power efficiency has been limited to loads of 50 ohms and efficiency over the whole load resistance range tested has not really been assessed.

The question of carrying out a wider range of efficiency tests came up when I received a small QRP (low power) version of the single coil Z match for examination. This unit was made with a coil of similar inductance to the original AR single coil Z match but this was achieved with a much smaller diameter coil with more turns. By setting the taps on the coil in the same proportion to the original AR unit, it produced the same performance in terms of load resistance range. However, the constructor of the unit was a little concerned that, in reducing the coil size, he might have degraded the efficiency too much. So, I set about measuring efficiency over the resistance load range of 10 to 2000 ohms. While I was on the job, I thought it would be of value to do this for other designs which have been well documented. As a result, I have produced curves for the efficiency of four of these designs at frequencies of 3.5, 7 and 14 MHz. I also looked at the AR single coil unit padded up with capacity for 1.8 MHz.

It has been said that we have already had enough published on the design of the Z match but I felt that the curves demonstrated some important characteristics which should be documented.

Method of Measurement

The curves were formed by taking efficiency measurements at a number of different values of load resistance over the load resistance range and interpolating between measured values.

To start the test, the Z match is fed from a noise bridge connected to a receiver tuned to the required frequency. The noise bridge is set to 50 ohms and zero reactance. The selected load resistance (Rl) is connected to the output of the Z match which is then adjusted for a match indicated by a signal null in the receiver. The impedance presented by the input of the Z match is now a resistance of 50 ohms.

The bridge input is replaced by a signal from the 50 ohm output of a signal generator tuned to the same frequency as the receiver. Using a high impedance probe, a reference voltage (Vi) is recorded across the 50 ohm input of the Z match and an output voltage (Vo) is measured across the load. Power efficiency is then calculated from the square of the ratio Vo/Vi multiplied by 50/Rl.

Voltage ratio between Vo and Vi is all that is required, rather than exact voltages, and I used the scale calibration of my CRO in conjunction with high impedance divide by 10 probes. Such probes have a shunt capacitance of 10 pF which can considerably modify the effective load impedance, particularly at the high values of load resistance at the higher frequencies. It is important when adjusting the Z match for the matching null that the probe be left across the load. The Z match adjustment then includes correction for the capacitive reactance caused by the probe.

Efficiency tests were carried out at 3.5, 7 and 14 MHz for loads ranging from 10 to 2000 ohms. I did not attempt measurements above 14 MHz as the test set-up was getting a little "touchy" at 14 MHz and I did not think I could rely on the validity of the results at any higher frequency.

The Models Tested

The curves (Figures 1, 2 & 3) have been taken on the following Z match models:

(1) AR Single Coil Z match as described in **Random Radiators,** *Amateur Radio,* August 1992 and in

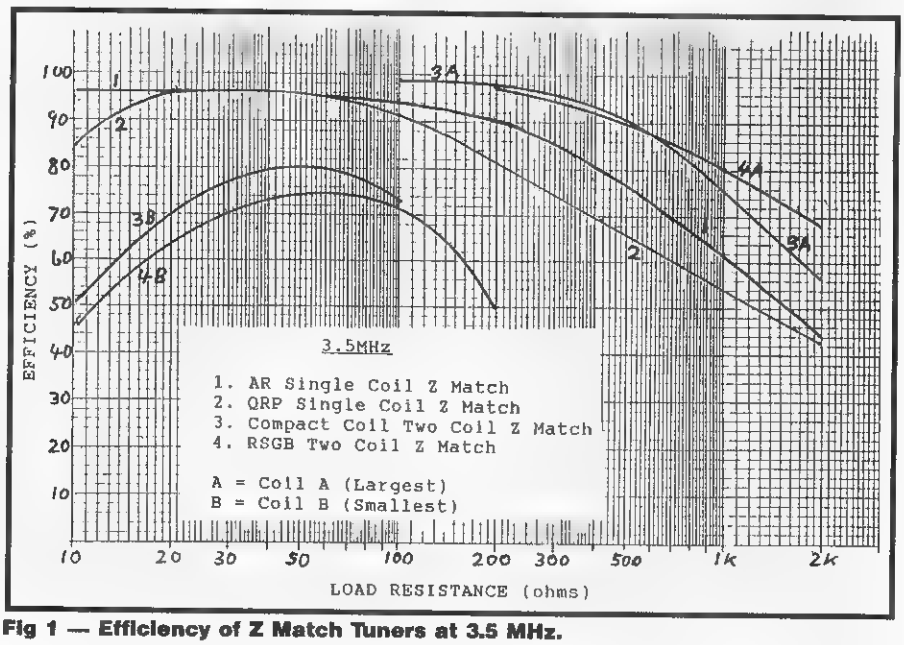


Fig 1 — Efficiency of Z Match Tuners at 3.5 MHz.

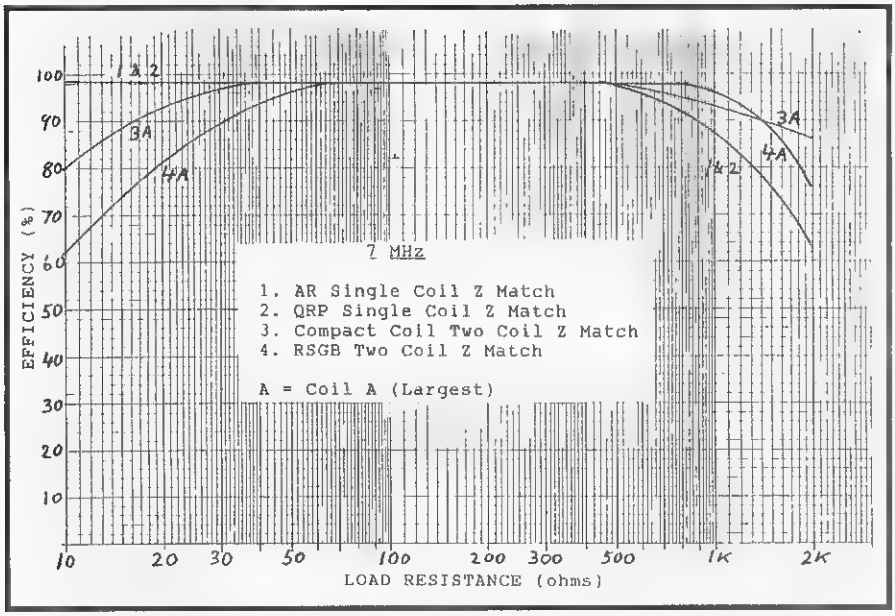

EFFICIENCY (%)
LOAD RESISTANCE (ohms)
7 MHz
1. AR Single Coil Z Match
2. QRP Single Coil Z Match
3. Compact Coil Two Coil Z Match
4. RSGB Two Coil Z Match
A = Coil A (Largest)

Fig 2 — Efficiency of Z Match Tuners at 7 MHz.

my report in Amateur Radio, April and May 1993.

(2) The QRP Single Coil Z match, similar in circuit design to the AR unit but which has a smaller coil construction as follows;

Primary 25 turns, 26 mm diameter, length 64 mm

Primary Taps — 13 and 17 turns

Secondary 6 turns, 32 mm diameter, length 13 mm

(3) The Compact Coil or Rononymous Two Coil Z Match as described in **Random Radiators,** *Amateur Radio,* March 1990 and in my report in *Amateur Radio,* December 1990.

(4) The earlier Two Coil Z match as described in the RSGB Handbook and based on an early design by Allen King W1CJL.

The samples of the AR single coil Z match and the Compact Coil two coil Z match were my own. The QRP single coil Z match was sent to me for testing and the RSGB type two coil unit was kindly loaned to me by Rob Gurr VK5RG.

The Results

Test results for 3.5, 7 and 14 MHz are shown by the curves of Figures 1, 2 & 3 respectively and these reveal

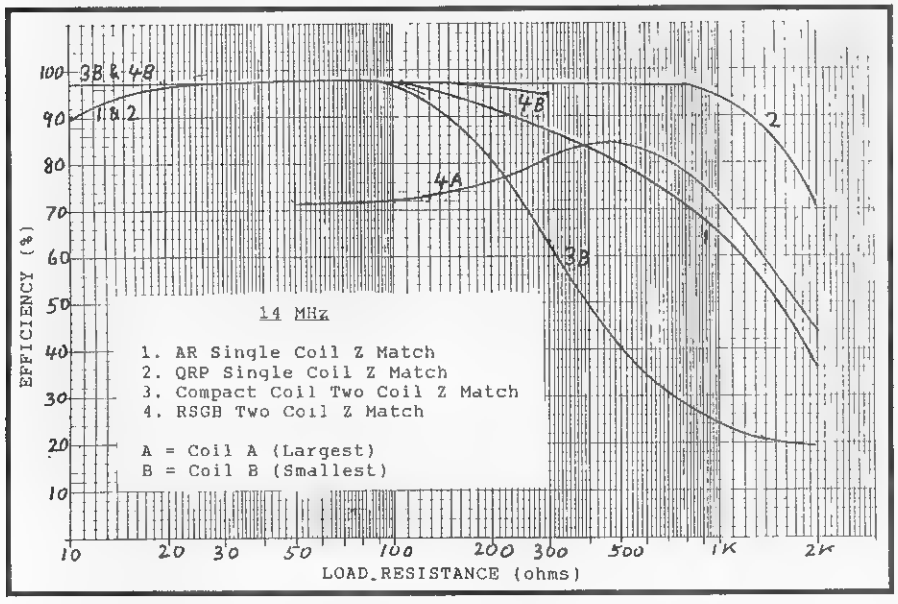

EFFICIENCY (%)
LOAD_RESISTANCE (ohms)
14 MHz
1. AR Single Coil Z Match
2. QRP Single Coil Z Match
3. Compact Coil Two Coil Z Match
4. RSGB Two Coil Z Match
A = Coil A (Largest)
B = Coil B (Smallest)

Fig 3 — Efficiency of Z Match Tuners at 14 MHz.

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some interesting characteristics. Let's first look at the two coil Z matches on 3.5 MHz. The original idea of the two coil unit was to use the larger coil (coil A) for 3.5 and 7 MHz and the smaller coil (coil B) for the higher frequencies. Experimenters soon found that, to make the Z match work over a range of load conditions, they sometimes had to deviate from that rule. In my experiments, I found that at 3.5 MHz it was necesary to switch to coil B of the RSGB circuit below loads of 200 ohms resistance and coil B of the Compact Coil unit below loads of 100 ohms resistance. Figure 1 shows that, whilst the values above these figures using coil A give quite high efficiency, the lower resistance loads using coil B give efficiencies in the order of only 60% to 70% — quite a discouraging result for the two coil unit.

All units have the tendency to fall off in efficiency as load resistance is increased above 200 to 300 ohms. For high resistance loads at 3.5 MHz, the two coil units show a better result than the single coil units. As might be expected with its lower value of unloaded Q, the smaller coil QRP single coil unit degraded in efficiency to the greatest extent, falling in value for loads beyond 100 ohms.

Referring now to Figure 2 for 7 MHz, all units do quite well. Over the load range of 30 to 1000 ohms, efficiency is at least 90%. Below 30 ohms the efficiency of the two coil units is reduced and above 500 ohms the single coil units fall away a little more than the two coil units.

At 14 MHz (refer Figure 3), the smaller QRP single coil Z match gave the best result maintaining at least 90% efficiency over a load range of 10 to 1000 ohms. The RSGB unit using coil B produced high efficiency up to a load of 300 ohms above which I couldn't get a match and had to switch to coil A which gave a lower efficiency result. The AR single coil unit produced an efficiency of at least 90% for loads up to 250 ohms above which efficiency deteriorated considerably as the load resistance was increased. For some reason or other, the Compact Coil two coil unit really suffered in its result for loads above 150 ohms, falling to the greatest extent of all the units tested at this frequency.

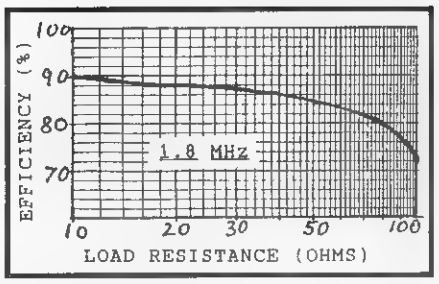

Fig 4 — Efficiency of Single Coil Z Match Tuner at 1.8 MHz.

In my article in *Amateur Radio,* April 1993, I showed how the AR Single Coil Z Match could be extended down in operation to 1.8 MHz and further in my article in *Amateur Radio,* October 1994, I included a circuit of my own constructed version which matched a load range of 10 to 100 ohms. Whilst I was on the job of measuring efficiencies, I also included this unit at 1.8 MHz and the result is shown in Figure 4. For the typical 1.8 MHz Marconi antenna arrangement (often less than 1/4 wave), we might expect antenna resistances in the order of 15 to 35 ohms. From the results (Figure 4), the anticipated tuner efficiency for these loads is in the order of 85% to 90%.

Some Conclusions

The curves show that efficiency of the various Z match tuners varies considerably with variation in frequency and load resistance. The AR Single Coil Z match which we promoted in 1993 is shown to have high efficiency for load resistance between 10 and 200 ohms. On some frequencies, it becomes less efficient as the load resistance is increased above the 200 ohm point. For the general run of antenna systems, the resistance component reflected by the system is more likely to be less than 200 ohms and hence loss of efficiency for high resistance loads is not as great a concern as loss of efficiency at low resistance loads.

However, for the two coil Z match units, the need to use coil B below 100 to 200 ohms on 3.5 MHz gives a loss in the unit of about one third of the power (or about 1.8 dB). This represents a fraction of an S point and on the air could go unnoticed. However, it is a loss of power we would prefer to do without for the usual low resistance antenna load. **The good news is that it can be fixed.**

The two coil Z match units can be made to tune low resistance loads on coil A by simply tapping back the secondary turns of that coil. On my Compact Coil unit, I tapped back the secondary of coil A from the designed seven turns to four turns and found that I could still tune over the whole load range of 10 to 2000 ohms for both 3.5 and 7 MHz but using only coil A. Of course this was what coil A was supposed to do in the first place. Efficiency for low resistance loads was now restored to much higher values and comparable with those achieved using the Single Coil unit. I did not feel I should mess around with the RSGB design unit I had borrowed from Rob but I anticipate that the RSGB unit would produce similar results if its coil A secondary was tapped back.

If nothing else, my tests have highlighted a deficiency in the performance of the two coil units and shown how this can be rectified. Considering the original reason for commencing the tests, they should also provide some assurance to our QRP Single Coil constructor that his unit is reasonably efficient provided that high resistance loads at 3.5 MHz are avoided.

Why the Compact Coil Two Coil Z match showed so poorly above 200 ohms at 14 MHz is a job for another day.

References

1. *AR Single Coil Z Match — Lloyd Butler VK5BR* — Amateur Radio *April & May 1993. — Also refer to Random Radiators,* Amateur Radio *February 1993.*
2. *Tests on the Compact Coil Z Match — Lloyd Butler* — Amateur Radio *December 1990 — Also refer to Random Radiators,* Amateur Radio *March 1990.*
3. *Radio Communications Handbook — RSGB — Section on HF Aerials including Z Match.*
4. *Feedback on the Design of the AR Single Coil Z Match Tuner — Lloyd Butler VK5BR* — Amateur Radio *October 1994.*

* *18 Ottawa Avenue, Panorama SA 5041*

AT

ALARA

Sally Grattidge VK4SHE, ALARA Publicity Officer.*

YLRL Sponsored Contest YL Anniversary Party (YL-AP)

CW: 1400 UTC Wed 11 Oct to 0200 UTC Fri 13 Oct 1995
SSB: 1400 UTC Wed 25 Oct to 0200 UTC Fri 27 Oct 1995

These contests are open to all licensed women operators worldwide. Non-YLRL members receive certificates only. All bands. No cross-band, net or repeater operation. Call "CQ YL". Logs must show time, band and transmitter power, QSO number sent and received, callsign, RS(T) sent and received, US ARRL section/Canadian Province/Country of station worked and operator's call and YLRL membership status. Separate logs for each contest. Logs to be readable and signed. No logs will be returned. Send to Carla Watson W06X, 473 Palo Verde Drive, Sunnyvale, CA 94086, USA postmarked no later than 30 days after each contest.

Frequencies to be CW on 3.540 — 3.725 MHz, 7.040 — 7.070 MHz, 14.040 — 14.070 MHz, 21.120 — 21.150 MHz and 28.150 — 28.200 MHz; and SSB on 3.940 — 3.970 MHz, 7.240 — 7.270 MHz, 14.250 — 14.280 MHz, 21.380 — 21.410 MHz and 28.300 — 28.610 MHz. NA-YLs should look for DX-YLs in other parts of the bands.

Scoring (DX-YL), separate logs for CW and SSB, NA-YL located in US ARRL section or Canadian Province, DX-YL all others. One point for each QSO on the same continent. Two points for each QSO on a different continent. Multiply by the sum of each US ARRL Section, Canadian Province or country worked. Multiply again by 1.5 if using less than 100 W CW or 200 W PEP SSB (low power multiplier) at all times. Power limit 750 W CW, 1500 W PEP SSB for other contestants.

Silent Operator Bill Woodger

(from Backscatter, Newsletter of the Townsville Amateur Radio Club)

Bill passed away in July 1995, leaving his mark with the Townsville Amateur Radio Club and ALARA. He was an active CB operator who attended classes some twelve years ago pursuing that elusive call, but somehow never made it. During his involvement with the Townsville club he was the instigator and prime mover in the creation of the "Florence McKenzie Memorial Trophy" which TARC donated to the fledgling ALARA group.

This magnificent trophy has two tiers, with a small Morse key in the centre of the base, surrounded by four supports. The top tier has a large face analogue clock which almost doubles its height. Bill and Bob VK4WJ presented this trophy to then ALARA President, Helene VK7HD, in Townsville at a barbeque on 1 June 1984.

Bill will be remembered each year as the trophy is awarded, as part of the ALARA Contest in November, to the highest scoring Australian YL Novice operator on CW. The trophy is highly valued and winners are respected for their skill and determination.

Helping Hands

Frances Wooley G3LWY — Richard Pedder VK4BBA/G3NEE

Back in the early 50s, Frances and her husband Joe G3ESR noted that many stations they made contact with on a particular band had some disability. They published a note in the Radio Society's monthly magazine asking amateurs or

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You may be wondering whether there's *really* enough to interest you in a radio magazine which also has news about CB in it. The answer is a very definite *yes*!

This month, we tell you all about working the US Space Shuttle and the Russian Space Station Mir, review the outstanding new Australian linear amplifier made by Emtron (it *must* be good — it's the front cover review in the latest JA *Mobile Ham* magazine!), continue our antenna series with a long look at G5RVs of all sizes, review a couple of Morse keyboards, consider the pros and cons of privately importing your own equipment, take another look at radio on the Internet... and a whole lot more! Why not check out this month's edition yourself?

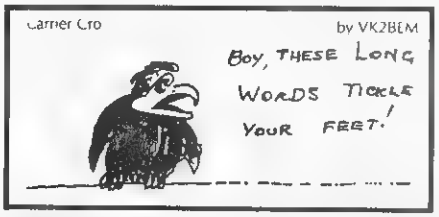
At only $3.95, it's darned good value for amateurs... oh yes, *and* for SWLs, CBers...

SWLs who were housebound with disabilities to write to them.

The response was remarkable, and Frances and Joe decided to form a club. Weekly transmissions started on 80 metres. George G6JP and Digs G3WJT, an ex submariner, offered to help, and in 1954 the Radio Amateur and Bedfast Club (as it was known then) was formed. The club grew rapidly and more supporters were called in to help with the education side of becoming an amateur, and to assist in putting up antennas and keeping equipment in good repair.

In the late 60s, Peter G3TWF, a doctor, gave tremendous help keeping an eye on the members, and was often heard mobile, racing around the countryside in his Porsche. He was known as "flying doctor". Frances' husband Joe was Postmaster of Wigan Post Office in Lancashire and could only help after office hours, but he did manage to obtain free postage for blind members.

Meanwhile, Frances and her helpers were gathering momentum, as well as new members, and in the early 60s they began publishing a quarterly magazine named RADIAL which was an immediate success. Lack of funds was an on-going problem and members and supporters often sent a little extra with their subs to help out.



VK2BEM is Mary, a member of ALARA.

Peter G3MUM was an early member who gained his full call with help from the club and his mother. As a young man Peter was struck down with polio and confined to an iron lung. He lost speech and the only movement he had was in his left foot. He passed his 12 wpm Morse with flying colours, gaining him the nickname "Twinkle Toes" by which he is still known today.

The Radio Amateur Invalid and Blind Club, as it is now known, began to have a small stand at various hamfests (known in the UK as rallies) to spread the word and hopefully collect a few donations. At one such event several of the commercial companies present made generous donations, and since then the club has been supported by them and by other clubs.

Richard G3NEE was a supporter for many years before rheumatoid arthritis turned him into a full member. During this time he was active on daily nets and spoke often with Joe and Frances, had visits from Digs and his wife Margaret, and the "flying doctor". He now lives in VK, but maintains contact with the club.

Frances is still active with RAIBC as Vice President along with George G6JP. Unfortunately, Joe became a silent key in the 70s. He would have been proud to see the club today with over 1600 members and supporters. Fifteen percent of the

members are "white stick" operators and thirty of these are YLs. There are many SWLs, both blind and disabled, whose lives have been enriched by amateur radio. The club has even been able to supply equipment to members unable to purchase their own and assist them in many ways.

Frances is a special lady who played a large part in bringing together many disabled people through amateur radio.

20th Birthday Party

On Saturday, 22 July, ALARA held its Birthday net on 80 m. The net ran from 7 pm to 11 pm with fifteen callsigns participating, several of whom were there for the full four hours.

Taking part were Christine VK5CTY, Judy VK3AGC, Bron VK3DYF, Bev VK4NBC, June VK4SJ, Val ZL2PZ, Sally VK4SHE, Robyn VK4RL, Pat VK3OZ, Dot VK2DDB, Margaret VK2MAS, Margaret VK4AOE, Bev VK6DE, Velma VK4NVM and Celia ZL1ALK. A special welcome to Margaret VK2MAS as it was her first time on air.

C/o PO Woodstock, QLD 4816

WIA News

Spectrum Licensing Not Popular?

The Australian Electrical and Electronics Manufacturers Association (AEEMA) has expressed disagreement with the Spectrum Management Agency's proposed spectrum licensing regime. Introduction of a spectrum licensing regime is presently being considered by the SMA following public comment on their recent discussion papers on the issue.

In the July *ATIA News*, the newsletter of the Australian Telecommunications Industry Association (an AEEMA affiliate), a report on spectrum licensing said: *"The Association has maintained that the Apparatus Licence system which allows ready trading in licences is the most appropriate mechanism to meet the needs of the radio communications and telecommunications industries and requirements for efficient use of spectrum."*

The report went on to say that the introduced reforms to the Apparatus Licence System (including the revised fee structure) offers many advantages over spectrum licensing. *"It is the Association's belief that some of the assumptions of the Agency underlying its reasonings are flawed and excessively reliant on accounting principles rather than the effective and efficient management of spectrum resources."*

The Association also has a major disagreement with the proposed 10 year term for spectrum licences, maintaining that, should spectrum licences be introduced, fifteen years is more appropriate as it *". . .is a more accurate reflection of technology time frame."*

AEEMA said they will maintain close involvement in the reforms in this area. They are represented on the SMA's Radiocommunications Consultative Council (RCC) through AEEMA's Radio Communications Division Chairman, Bernie O'Shannassy of Motorola Communications. The WIA is represented on the RCC by David Wardlaw VK3ADW.

AWARDS

*John Kelleher VK3DP — Federal Awards Manager**

The only significant change to the general awards information this month is the addition of North Korea to the ARRL DXCC listings. DXAC have accepted and recognised the operation by OH2AM/P5 earlier this year. This raises the DXCC countries list to 327 countries.

The previous operation by P5RS7 cannot be accepted for addition to your current listings (what a pity!).

Applications for update are being received in respect to I2RAO/HK0, claiming either Columbia, or Malpelo Island. In actual fact, this short operation by Ermanno I2RAO was merely a chance to operate from a remote island, and to have it accepted for IOTA credit. It is Gorgona Island, IOTA SA-017. Consequently it cannot be claimed for either of the above (again, what a pity!).

Another operation to come under scrutiny was 4K5ZI — EK5ZI Snake Island. This island was, and probably still is, a Russian military base. As a result, no documentation was ever received for submission to DXAC. Yet again, what a pity! I had contacts with all three.

In later information, the DXAC voted 15 to 1 to suspend further study of the status on Aruba, until the Netherlands and Aruba announce any change in the current move toward independence for Aruba, originally slated to occur in 1996.

In the same ballot meeting, the DXAC voted 9 to 7 against recommending the addition of Scarborough Reef to the DXCC Countries List (any bets on Pratas Island?).

My commiserations to those whose upgrades and additions to their WIA DXCC were not received in time for processing and publication in last month's *Amateur Radio* magazine. To be sure, time your upgrades, etc to reach PO Box 2175, Caulfield Junction VIC 3161 at least six to seven weeks before publication date of the magazine. Deadlines are usually published near the bottom of page 1 of the magazine, eg the October deadline is 11 September 1995.

The Bulgarian Federation of Radio Amateurs (BFRA) presents an interesting awards program of six events, with six attractive certificates which are available to all amateurs throughout the world for two-way contacts or SWL reports on CW, SSB/AM, or mixed. A properly certified list of contacts, specifying stations worked, date, time, band and mode, together with a fee of 10 IRCs should be sent to BFRA Award Manager, PO Box 830, BG-1000 Sofia, Bulgaria.

Republic of Bulgaria

For this Certificate, QSOs/SWL reports after 1 January 1965 are valid. For DX applicants, 20 QSOs with different LZ stations are required, 10 with LZ1/LZ3/LZ5, and 10 with LZ2/LZ4/LZ6, irrespective of the band.

5 Band LZ Award

QSOs/SWL reports after 1 January 1979 are valid. A total of 10 QSOs is required; one QSO with LZ1/LZ3/LZ5 and one QSO with LZ2/LZ4/LZ6 on ALL bands (3.5, 7, 14, 21 and 28 MHz).

W 100 LZ Award

QSOs/SWL reports after 1 January 1979 are valid. 100 QSOs with different LZ stations during one calendar year are required.

W 28 Z ITU Award

QSOs/SWL reports after 1 January 1979 are valid. Contacts and reports with the following countries from ITU zone 28 are required: DL, HA, HB9, HB0, HV, I, IS0, LZ, OE, OK, OM, SP, SV, SV5, SV9, SY/A, S5, TK, T7, T9, YO, YU, ZA, Z3, 9A, 9H and 4U1ITU.

Black Sea Award

QSOs/SWL reports after 1 January 1979 are valid. 60 QSOs/SWL reports with different amateur stations located in the countries bordering the Black Sea are required. A minimum of one QSO/SWL report with each of the following countries, LZ, TA, YO, UA6 and US, is mandatory.

Sofia Award

QSOs/SWL reports after 1 January 1979 are valid for this award. Amass 100 points for contacts with stations located in Sofia, capital city of Bulgaria, in the following manner. Contacts on 3.5 MHz = 15 points; 7 MHz = 5 points; 14 MHz = 1 point; 21 MHz = 2 points; 28 MHz = 3 points.

Each station may be worked/reported once per band irrespective of the mode.

In conclusion, here is a tale of woe from a good friend, John Saunders VK2DEJ. I will only quote excerpts from his letter. John wrote *"In early 1992, I received a direct return QSL card from a contact with MONGOLIA. Like so many such QSLs, it was accompanied with details of some Mongolian awards. I checked and found that I had enough QSLs to claim their top award. I sent off the claim, and six months later was informed that I had indeed won their top award No 001, and that the award should be on its way.*

I have written some eight letters, some duplicating the award fees, the latest being registered, and to date have not received any reply."

This is a classic example of what seems to be happening all over the world. It seems that an avid award chaser has to be very careful in his choice of subject. It could very well be that we have dishonest postal workers along the route to Mongolia, or that, for some reason, the Mongolian Amateur Radio authorities forgot to read or to speak English for three and a half years.

On John's behalf, and because I don't want to see awards hunting getting a bad name, I will pass a short letter to MRSF Awards Manager, PO Box 639, Ulan Bator, Mongolia. Hoping that some of you will do the same.

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A Plethora of Tracking Programs

Last month I reviewed a new version of STSorbits Plus. It occurred to me that over the past 12 months or so we have seen many new satellite tracking programs come onto the market. Some are freeware, some are shareware and some are commercial products. They track satellites, but it doesn't end there. There seems to be a trend to make them ever more "feature filled".

The tracking algorithm cannot be much different from W3IWI's or G3RUH's original work. If a printout program is required, BASIC ORBITS or one of its derivatives will still do the trick. If a multiple footprint graphics program suits your purpose, SATFOOT still has it all. For general use in amateur radio satellite users' shacks, INSTANTRACK has earned a place as industry standard. Why? These programs set out to do ONE thing and do it very well. Some late runners in this game are so complex and filled with so many "features" that they require your undivided attention to make them work. To fully exploit their features they would need to be run up on several machines at once with all screens viewed simultaneously.

All this is fine if the aim is to impress one's friends. Practically, however, the simpler programs win overwhelmingly and, importantly, they do not demand a super fast PC to run. The message is, evaluate carefully before spending lots of money. Will it do what is required or is it just a pretty face? Will it just sit there and occupy lots of disk space? Will it be dragged out only to show off to your friends?

I recently down-loaded one such Windows based product from the Internet. It promised the world. It turned out to be so clumsy in operation that I immediately deleted it and did not even save a floppy disk copy.

Space Station MIR

What follows should be useful information for all satellite users who have had contact with MIR. For those yet to try, the MIR station is among the easier satellite contacts. The FM voice signals are strong enough to work on a hand held transceiver at times and the digital PMS is usually turned on.

Its callsign is R0MIR-1. The frequency most used by MIR is 145.550 MHz. Finding MIR can be a problem for two reasons. It is in a very low earth orbit and therefore subject to a lot of atmospheric drag and it is also subject to manoeuvring by the controllers. You will need to have the very latest set of keps in your computer tracking program to be sure to find MIR.

Being a LARGE complex, MIR is quite visible to the naked eye given the right circumstances. The best times are just after sunset and just before dawn. The sky has to be fairly dark and MIR has to be in sunlight. Your tracking program will tell you when the conditions are right. The information that follows was collected from bulletins appearing on packet radio and CompuServe.

A Retrospective of Amateur Radio Activity on the MIR Space Station (including QSL information)

From (and in his own words) Serge Samburov RV3DR provided the following information.

Amateur radio on board the Soviet Space station "MIR" started on November 1988. Equipment used: Transceiver Yaesu FT290R, 2 m FM, 2.5 watts output; many thanks to UA6HZ, antenna GP, specially installed. 144-146 MHz FM Voice. The CALL was U#MIR (U-USSR, #-HAM number cosmonaut, MIR-space station "MIR"); U0MIR is collective station call.

# CALL NAME	# CREW	FLIGHT DATE
01 U1MIR VLADIMIR TITOV	3	21.12.87-21.12.88
02 U2MIR MUSA MANAROV	3	21.12.87-21.12.88
03 U3MIR VALERY POLYAKOV	3/4	29.08.88-27.04.89
04 U4MIR ALEKSANDR VOLKOV	4	26.11.88-27.04.89
05 U5MIR SERGE KRIKALEV	4	26.11.88-27.04.89
06 U6MIR ALEKSANDR VIKTORENKO	5	06.09.89-19.02.90
07 U7MIR ALEKSANDR SEREBROV	5	06.09.89-19.02.90
08 U6MIR ANATOLY SOLOVYEV	6	11.02.90-09.08.90
09 U7MIR ALEKSANDR BALANDIN	6	11.02.90-09.08.90
10 U8MIR GENNADY STREKALOV	7	01.08.90-10.12.90
11 U9MIR GENNADY MANAKOV	7	01.08.90-10.12.90

From February 1991 new equipment was installed: Transceiver Icom IC228A/H, 2 m FM, 5/25 watts output, same GP, TNC-PacComm HandiPacket packet controller and IBM PC AT "Laptop". 144-148 MHz FM Voice and packet.

From 4 October 1991 beginning Austrian Ham-Radio experiment AREMIR (Austrian device: transceiver Alinco DJ-120, TNC-2 -packet controller). Thanks to Ham Austria! Especially to: OE3GPA, OE3MZA and OE6VND for a very interesting experiment. AREMIR — 2 m FM voice, CW and packet beacon. And from 10 October packet.

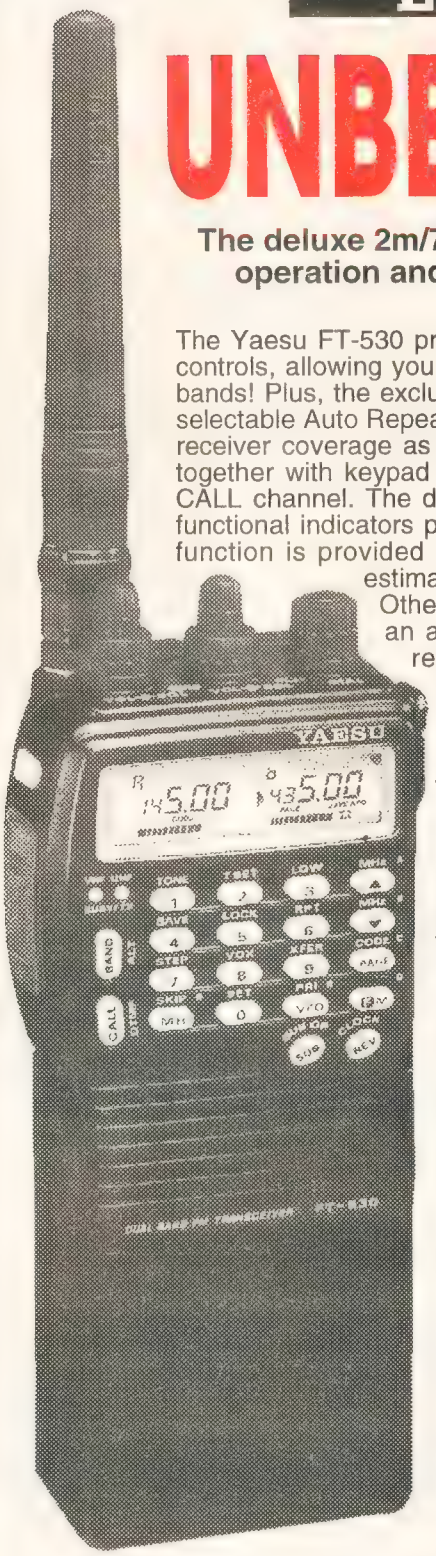
From 19 March 1992, Ham-Radio experiment GERMANY-DVM MKF Digital-Voice-Memory Microphone. Thanks to HAM GERMANY and especially to DL9MH and DL2MDE. Call was U#MIR. PMS call was U#MIR-1. U0MIR-call collective station.

# CALL NAME HAM	# CREW	FLIGHT DATE
2 U9MIR VIKTOR AFANASIEV	8	02.12.90-26.05.91
13 U2MIR MUSA MANAROV	8	02.12.90-26.05.91

DICK SMITH
ELECTRONICS

UNBEATABLE VALUE!

The deluxe 2m/70cm dual-band hand-held Transceiver that offers easier operation and more features than ever before is still available at an unbelievably low price!



The Yaesu FT-530 provides a flexible dual receiver facility with separate volume and squelch controls, allowing you to listen on two frequencies in the same band or one frequency on both bands! Plus, the exclusive Australian version features full 70cm band coverage (420-450MHz), selectable Auto Repeater Shift on both 2m and 70cm (suits Australian band plan), and extended receiver coverage as standard. Two VFOs and 41 tunable memories per band are provided, together with keypad or dial frequency entry, seven selectable tuning steps and a one-touch CALL channel. The dual 5.5-digit LCD screen is back-lit for easy viewing and includes many functional indicators plus separate signal/P.O. bargraphs for both receivers. An LCD voltmeter function is provided so you can even monitor your battery's performance under load and estimate remaining battery life.

Other top features include: Inbuilt CTCSS encode/decode, CTCSS scanning, an auto battery saver (ABS) for extended battery charge life, a cross-band repeater facility and an inbuilt clock with alarm and snooze functions. Also provides VOX circuitry for use with the optional YH-2 headset, a user-replaceable Lithium back-up battery, and DTMF selective calling and paging. A DC supply jack allows simple transceiver powering and NiCad charging, with RF output in four selectable steps up to 5W at 12V. The FT-530 comes complete with an ultra high-capacity 1000mAH NiCad battery, belt clip, carry case and approved AC charger.

Cat D-3620

Specifications

Frequency range:	
Transmit:	144-148MHz, 420-450MHz
Receive:	130-174MHz, 420-500MHz, 800-950MHz
Current consumption:	
Auto power off	150uA
Standby (saver on)	16.8mA (both bands)
Dimensions:	55(W) x 163(H) x 35mm (D)
Transmitter:	
Power Output:	5, 3, 1.5, 0.5 (at 12V)
RF Power Output:	2.0W (2m) 1.5W (70cm) (Supplied 7.2V 1000mA/H NiCad)
Receiver:	
Sensitivity:	2m: < 0.158uV, 70cm: < 0.18uV (Ham bands only, 12dB SINAD)
Selectivity:	>60dB
Audio Output (12V):	300mW at 8 ohms

2 Year Warranty

YAESU

$699

Hurry, Limited Stocks Still Available At This SPECIAL LOW PRICE!!

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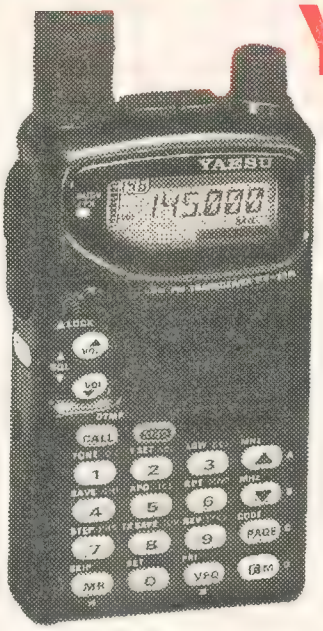


FT-11R Micro Deluxe 2m Handheld

One of the world's smallest 2m FM handhelds with a full-size keypad, the Yaesu FT-11R has been reduced in size, but not in features. Designed to fit comfortably in your hand, it's just 57 x 102 x 25.5mm (W.H.D) including the FNB-31 NiCad pack, and weighs only 280 grams. The result of the latest in miniaturisation, microprocessor control and FET technology, the FT-11R provides a large back-lit LCD screen with full frequency readout, 150 memories (75 in alpha-numeric mode), full function keypad with easy SET mode, and up/down thumb control Volume and Squelch settings. A new high efficiency FET RF amplifier provides 1.5W output standard from the compact 4.8V battery pack, and up to 5W output from 9.6V (using an optional battery pack or PA-10 mobile adaptor). A range of battery life extenders, including Auto Battery Saver, Tx Save, and Auto Power Off (with ultra-low 20uA consumption) are included. Australian version Auto Repeater Shift, DMTF based selective calling and paging, extended 110-180MHz receiver coverage (including the AM aircraft band), and a variety of scanning modes are also provided.
Other new features include naming of memory channels, DTMF Auto-dial memories, and DTMF Message Paging with up to 6 alpha-numeric characters. A large range of accessory lines are also available for easier customisation of your transceiver.
The FT-11R comes with an FNB-31 600mA/H NiCad, belt-clip, approved AC charger, CA-9 charge adaptor cradle and antenna.

Cat D-3640

2 Year Warranty **$599**

FT-2200 2m Mobile Transceiver

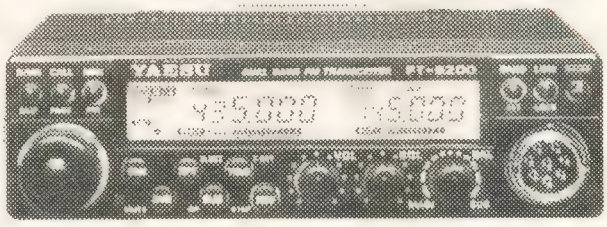
A compact, fully featured 2m FM transceiver with selectable power output of 5, 25 and 50 watts, it includes the latest convenience features for more enjoyable mobile or base station operation. Built around a solid diecast chassis, it provides 49 tunable memories, a large variety of scanning modes, an instant recall CALL channel, 7 user-selectable channel steps from 5kHz to 50kHz and is just 140 x 40 x 160mm (not including knobs). Backlighting of the large LCD screen, knobs and major buttons is even automatically controlled to suit ambient light conditions. Also provided is a 38 tone CTCSS encoder, DTMF based paging and selective calling with Auto-Page/Forwarding features, and 10 DTMF auto-dial memories. The LCD screen provides a highly legible bargraph Signal/P.O. meter plus indicators for the various paging and repeater modes. An optional internal DVS-3 digital recording/playback board can also be controlled from the front panel, giving even greater messaging flexibility. Supplied with an MH-26D8 hand microphone, mobile mounting bracket and DC power lead.

Cat D-3635

2 Year Warranty **$699**

FT-5200 2m/70cm Mobile Transceiver

Uses the latest innovations in compact cross-brand full-duplex and detachable front-panel design for brilliant mobile performance. It has 32 tuneable memories, a built-in antenna duplexer, dual full-frequency LCD screen (with signal strength/power output bargraphs for each band), 8-level automatic display/button lighting dimmer and dual external speaker jacks (one for each band). A thermally-activated fan allows up to 50 watts output on the 2-meter band and 35 on the 70cm band. Plus, scanning features include programmable scan limits, selectable scan resume modes, memory skip, priority monitoring and one-touch recall CALL channels. In addition, 6 user-selectable channel steps are provided and a FRC-4 DTMF paging selcall option lets you program a three-digit ID code so you can be paged by other transceivers, or page up to 5 other stations yourself. An optional YSK-1 remote panel lets you relocate the main rig (under the front seat, for example) and mount the control panel on the dash. The FT-5200 comes with hand-mic, mobile mounting bracket and DC power lead.



Cat D-3310

2 Year Warranty **$1399**

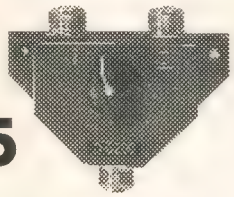
And All The Accessories You Need!

2-Way Coax Switch

A heavy-duty, 2-way coax switch that's suitable for Amateur, CB or commercial applications. It's well constructed with a die-cast case and can handle up to 2kW P.E.P. or 1kW CW at 30MHz with less than 0.2dB insertion loss.

Cat D-5200

$39.95



6m 1/2 Wave Base Antenna

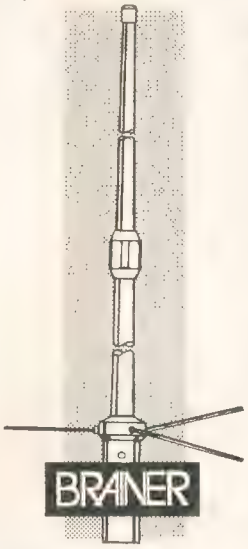
A rugged Australian-made vertical antenna designed to cover the 51 to 54MHz range, with minimum SWR around 53MHz. Built using high tensile T81 grade aluminium, it's just 2.9m long with a sealed base section and 100W minimum power rating. Complete with mounting hardware.

Cat D-4825

$69.95

High Performance 2m/70cm Base Station Antennas

Our range of top-name Brainer base station antennas offer outstanding quality and exceptional value. They are stacked colinear types providing high gain, wide bandwidth and a low radiation angle for extended range. The fibreglass reinforced polyester (FRP) outer tubing randome and gasket seals provide excellent all-weather operation, and they are supplied with compact ground-plane radials for a clean radiation pattern. Stainless-steel mounting hardware ensures a long trouble-free life. They also feature comprehensive instruction sheets to make installation and set-up easier. Both come with a 1 year warranty.



2m/70cm GST-1

Frequency: 144-148MHz, 430-450MHz
Gain: 6dB on 2m, 8dB on 70cm
Max. Power: 200W
Length 2.5m
Type: 2 x 5/8 wave (2m)
4 x 5/8 wave (70cm)
Connector: SO-239 socket

$199

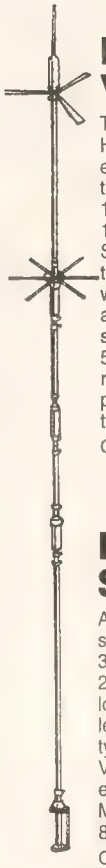
Cat. D-4830

2m/70cm GST-3

Frequency: 144-148MHz, 430-440MHz
Gain: 7.9dB on 2m, 11.7dB on 70cm
Max. Power: 200W
Length: 4.4m
Type: 3 x 5/8 wave (2m)
7 x 5/8 wave (70cm)
Connector: SO-239 socket

$299

Cat. D-4835



Rugged HF 5-Band Trap Vertical Antenna

The rugged 5BTV is a 5-band HF trap vertical which continues the Hustler tradition of quality and performance. It incorporates Hustler's exclusive trap design (25mm solid fibreglass formers, high tolerance trap covers and low loss windings) for accurate trap resonance with 1 kw (PEP) power handling. Wideband coverage is provided on the 10, 15, 20 and 40m bands (SWR typically 1.15:1 at resonance, < 2:1 SWR at band edges) with 80kHz bandwidth typical on 80m at less than 2:1 SWR. An optional 30m resonator kit can also be installed without affecting operation of the other bands. High strength aluminium and a 4mm (wall thickness) extra heavy-duty base section guarantee optimum mechanical stability. At just 7.65m, the 5BTV can be ground mounted (with or without radials, although radials are recommended), or it can be mounted in an elevated position with a radial system. Unlike some other antenna designs, the 5BTV can be fed with any length of 50-ohm coax cable.

Cat D-4920

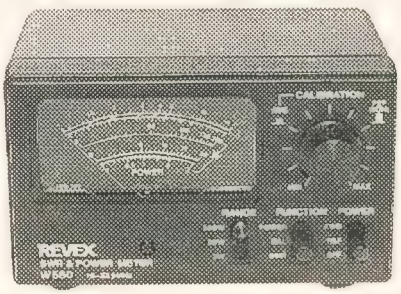
HUSTLER **$329**

Revex W56ON HF/VHF/UHF SWR/PWR Meter

Another quality Revex wide-band SWR meter, offering 2 inbuilt sensors for 1.8MHz to 525MHz coverage! Provides measurement of 3 power levels (3W, 20W, 200W), SWR (at low and high power levels) and uses an N-type socket for the VHF/UHF sensor to ensure minimal loss. Measures 120 x 80 x 85mm.

Cat D-1375

$369



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*MAJOR AMATEUR STOCKISTS STORES SHOWN IN RED.

B 2096

#	CALL	NAME HAM	# CREW	FLIGHT DATE
14	U7MIR	ANATOLY ARTSEBARSKY	9	18.05.91-10.10.91
15	U5MIR	SERGE KRIKALEV	9/10	18.05.91-25.03.92
16	GB1MIR	HELEN SHARMAN (ENGLAND)		18.05.91-26.05.91
17	U4MIR	ALEKSANDR VOLKOV	10	02.10.91-25.03.92
18	OE0MIR	FRANZ VIEHBOECK (AUSTRIA)		02.10.91-10.10.91
19	U6MIR	ALEKSANDR VIKTORENKO	11	17.03.92-10.08.92
20	U8MIR	ALEKSANDR KALERI	11	17.03.92-10.08.92
21	DP1MIR	KLAUS FLADE (GERMANY)		17.03.92-25.03.92
22	U6MIR	ANATOLY SOLOVYEV	12	26.07.92-01.02.93
23	U3MIR	SERGE AVDYEV	12	26.07.92-01.02.93
24	F5MIR	MICHEL TOGNINI (FRANCE)		26.07.92-10.08.92

From 1 January 1993 amateur radio activity continued using the same equipment. Transceiver Icom IC228A/H, 2 m FM, 5/25 watts output, GP antenna, TNC-PacComm HandiPacket packet controller and IBM PC AT Laptop. AREMIR: Austrian device: transceiver Alinco DJ-120, TNC-2 packet controller. AREMIR — 2 m FM Voice and packet. Germany device — DVM MKF (Digital-Voice-Memory Microphone).

From 1 January 1993 cosmonauts had a new series call R#MIR. Old series U#MIR still valid. Call was R#MIR (R-Russia, #-Ham number cosmonaut, R0MIR-call collective station, R0MIR-1 — call PMS; F = 145.55 MHz Pkt or voice.

#	CALL	NAME HAM	# CREW	FLIGHT DATE
25	U9MIR	GENNADY MANAKOV	13	24.01.93-22.07.93
26	R2MIR	ALEKSANDR POLESCHUK	13	24.01.93-22.07.93
27	R0MIR	op. VASILY ZIBLIEV	14	01.07.93-14.01.94
28	R0MIR	op. ALEKSANDR SEREBROV	14	01.07.93-14.01.94
29	F6MIR*	JEAN-PIERRE HAIGNERE(FRANCE)		01.07.93-22.07.93
30	U9MIR	VIKTOR AFANASIEV	15	08.01.94-14.07.94
31	R3MIR	YURIJ USACHEV	15	08.01.94-14.07.94
32	U3MIR	VALERIJ POLYAKOV	15/16/17	08.01.94-22.03.95
33	R0MIR	op.YURIJ MALENCHENKO	16	01.07.94-02.11.94
34	R0MIR	op.TALGAT MUSABAEYV	16	01.07.94-02.11.94
35	R0MIR	op.ALEKSANDR VIKTORENKO	17	03.10.94-22.03.95
36	R0MIR	op.YELENA KONDAKOVA — !	17	03.10.94-22.03.95
37	R0MIR	op.ULF MERBOLD (ESA-GERMANY)		03.10.94-02.11.94
38	U6MIR	GENNADY STREKALOV	18	14.03.95-31.05.95
39	R0MIR	op.VLADIMIR DEZHUROV	18	14.03.95-31.05.95
40	R0MIR	op.astronaut NASA — ???	18	14.03.95-31.05.95
41	R0MIR	op.ANATOLY SOLOVYEV	19	10.06.95-30.08.95
42	R4MIR	op.NIKOLAI BUDARIN	19	10.06.95-30.08.95
43	R0MIR	op.YURIJ GIDZENKO	20	22.08.95-30.12.95
44	U9MIR	SERGE AVDYEV	20	22.08.95-30.12.95
45	ROMIR	op..... (ESA-....)		22.08.95-30.12.95
46	R0MIR	op.YURIJ ONUFRIENKO	21	25.12.95-17.06.96
47	R3MIR	YURIJ USACHEV	21	25.12.95-17.06.96
48	R0MIR	op.astronaut NASA — ???	21	25.12.95-17.05.96

Notes

#29 Cosmonaut (France) — used Ham Radio, but his amateur radio activity was not included in the space program. Therefore, I cannot confirm QSO with F6MIR! #37 Astronaut ESA R0MIR/DL (DP3MIR) — ULF MERBOLD. Astronauts NASA #40 (NORMAN THAGARD) and #48 not included in Ham radio activity in space program today.

From 1 January 1993 the new QSL Manager for cosmonauts is RV3DR. Also I confirm all QSOs with station MIR from 1988.

RV3DR-Serge Samburov, Space "MIR" QSL Manager, Chief of Cosmonaut Amateur Radio Department RKK "Energia". All QSLs should be sent direct to PO Box 73, Kaliningrad-10 City, Moscow Area, 141070, Russia. Send me MSG via PKT: RV3DR@R0MIR or RV3DR@RK3KP.#MSK.RUS.EU

BEST 73 RV3DR

**359 Williamstown Rd, Yarraville VIC 3013*
*Packet: VK3JT@*VK3BBS.#MEL.VIC.AUS.OC
CompuServe: 100352,3065

BT

Club Corner

Riverland Radio Club

The Riverland Radio Club held its Annual General Meeting on 6 July 1995.

The following members have another year to serve: Tony VK5ZAI, President; David VK5NAP, Vice-President; Kingsley VK5AKN, Committee; and Malcom Gardener, Committee.

The following committee members have been re-elected for a two year term: Mike VK5CK, Adrian VK5AJR and Doug VK5GA. Chris VK5PBI is a newly elected member.

Doug VK5GA was re-elected as Secretary/Treasurer.

The President, Tony VK5ZAI, made reference in his annual report to the club's first successful Hamfest. The financial position of the club has also enabled the club to own and operate its own BBS which is being managed most efficiently by Richard VK5AET.

Gary VK5CWP, David VK5NAP and Chris VK5PBI have been enthusiastically involved with promoting amateur radio through JOTA over the past years.

Tony VK5ZAI also thanked John VK5ARK, Kingsley VK5AKN, Ivan VK5HS and Doug VK5GA for their dedication in broadcasting the slow Morse practice session every week.

Ivan VK5HS has also promoted amateur radio with his involvement with the communications of the Variety Club Bash.

In closing, Tony VK5ZAI thanked all members for their participation in club activities and looks forward to another successful year.

Doug Tamblyn VK5GA

Radio Amateur Old Timers Club of SA

The annual luncheon will be held on Tuesday, 24 October 1995 at 11.30 am (for a 12.30 pm lunch) at the Marion Hotel, Marion Road, Mitchell Park and it will be pay-as-you-go.

Amateurs age 60 years or over, who are eligible to hold the AOCP certificate for 10 years or more, are invited to join us.

Committee members at present are President, Jack Townsend VK5HT (tel 295 2209); Secretary Ray Deane VK5RK (tel 271 5401); and Lew Schaumloffel VK5AKQ (tel 263 0882). RSVP to any of the above committee before 20 October for catering purposes. On public transport you can reach the venue on TA Bus 43, stop 24.

Ray Deane VK5RK
Secretary

Ballarat Amateur Radio Group Inc (BARG)

1995 Hamvention

Keep the weekend of 28 and 29 October free, as BARG will once again be conducting their Hamvention. You are assured that it will be much bigger and better than ever. New activities are being planned and this year we have moved to A NEW VENUE — the Wool Pavilion at the Ballarat Showgrounds, on the corner of Howitt St and Creswick Road (Midland Highway).

Entrance will be from White Ave, which is at the rear of the complex. Tom VK3DMK and Cliff VK3CCB are organising this year's show and you are advised to contact them ASAP if you require trestle space or are intending to come to the Saturday night counter tea.

An extended series of fox and sniffer hunting will be conducted over both full days and plenty of activity is assured if fox-hunting's your game.

Apart from the usual commercial and pre-loved displays and sales, there will be demonstrations of packet, ATV, SSTV/FAX, CW, QSL Cards, WICEN, satellite coms, a homebrew competition and a Club Equipment Display. All displays and sales will be "under cover" to offer protection from the Ballarat sunshine.

"Take Away" type meals will be available and coffee and tea will be FREE all day. Don't forget to bring the family as the Rotary Club "Trash and Treasure" market will be operating on an adjacent site. More information will be available in the insert to October *Amateur Radio.* We look forward to seeing you there.

Doug Raper VK3VBA
Publicity Officer

Moorabbin and District Radio Club Inc

At the recent Annual General Meeting of the M&DRC, the following members were elected to office; President, Lee Moyle VK3GK; Vice President, David Armstrong VK3XJP/PNL; Secretary, Paul Girling VK3ALE; Treasurer, Morrie Lyons VK3BCC; Committee, Ian Southwell VK3NIS, Wally Hunt VK3JWH, Ken Millis VK3TKR and Harold Hepburn VK3AFQ.

The meeting was very well attended for such a cold winter's night, with over 40 members in attendance, something not seen for some years. Following the meeting, members availed themselves of the refreshments and light supper supplied by the club.

All amateurs are reminded of the club net each Monday night, commencing at 8 pm on 3567 kHz, plus or minus QRM. The club award is available to those amateurs wishing to collect awards. The easiest way to get this award is every Monday night during the club net. Details of the award will appear in a future edition of these notes.

For details about the club, please write to The Secretary, Moorabbin and District Radio Club, PO Box 58, Highett VIC 3190.

Denis Babore VK3BGS
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Contests

*Peter Nesbit VK3APN — Federal Contest Coordinator**

Contest Calendar Sep — Nov 1995

Sep 2/3	All Asia DX Contest Phone	(May 95)
Sep 3	Bulgarian DX Contest	(Aug 95)
Sep 3	Panama Anniversary Contest	(Aug 95)
Sep 9/10	Worked All Europe Phone	(Jul 95)
Sep 16/17	SAC DX CW	(Aug 95)
Sep 23/24	SAC DX Phone	(Aug 95)
Sep 23/24	CQ WW RTTY DX Contest	(Aug 95)
Oct 1	RSGB 21/28 MHz Contest Phone	
Oct 7/8	VK/ZL/Oceania DX Contest Phone	(Aug 95)
Oct 14/15	VK/ZL/Oceania DX Contest CW	(Aug 95)
Oct 15	RSGB 21/28 MHz Contest CW	
Oct 21/22	Worked All Germany Contest Mixed	
Oct 28/29	CQ WW DX Contest Phone	
Nov 11	ALARA Contest	
Nov 11/12	WAE RTTY DX Contest	(Jul 95)
Nov 11/12	OK-DX CW Contest	
Nov 11/12	ARRL International EME Competition	
Nov 18/20	All Austria CW Contest	
Nov 25/26	CQ World-Wide DX CW Contest	

With this column being prepared at the eleventh hour (due to work commitments), and accepted only due to the good graces of the production editor, it hasn't been possible to put together the usual ruminations on contest matters (well, not anything you'd want to read anyway). I had hoped to present some information on a proposed contest rating system, forwarded by Martin VK5GN, but that will have to wait until another time. At least the editors will be pleased at the unusually short column this month!

Thanks to DL2DN, *CQ, QST,* and *Radio Communications.* Until next month, good contesting!

Peter, VK3APN

Addendum to Results of 1995 John Moyle Field Day Contest

An error occurred when I was compiling the results of this contest which were published on page 36 of last month's *Amateur Radio* magazine. Terry VK4KAC achieved first place in the Portable, 24 hour, Single Operator, all band, Phone section. He is awarded a certificate denoting first place for his section.

Phil Rayner VK1PJ

RSGB 21/28 MHz DX Contest

Phone: 1 October, Sun 0700 — 1900z
CW: 15 October, Sun 0700 — 1900z

The object is to work as many UK stations as possible on 21 and 28 MHz (UK includes GI, but *not* EI). Categories are: single operator, multioperator, and SWL. The CW section includes a QRP category for stations not exceeding 10 W output. The recommended frequencies for phone are 21150-21350 and 28450-29000 kHz.

Send RS(T) plus serial starting at 001; UK stations will add their county code. Score three points per QSO. The final score equals the total points times the total multiplier (ie counties worked on each band added together). Use a separate log for each band. Send logs and summary sheets, to arrive by 1 December (phone) or 11 December (CW), to: RSGB HF Contests Committee c/o G3UFY, 77 Bensham Manor Road, Thornton Heath, Surrey CR7 7AF, England. A comprehensive range of awards is offered.

SWLs may only log UK stations making contest QSOs with overseas stations. SWL logs should be headed time UTC; callsign heard; number sent by that station; callsign of station being worked; new multipliers; points. In the column headed "station being worked" the same callsign may only appear once in every three QSOs except when the logged

station counts as a new multiplier. HF Tx licence holders are ineligible to enter the SWL section.

Iberoamericano Phone Contest

7/8 October, 2000z Sat — 2000z Sun

For rules, see this column September 1994.

Worked All Germany DX Contest (CW & Open)

21/22 October, 1500z Sat — 1500z Sun

In this contest, which occurs on the third full weekend every year, the world works Germany. Categories are: Single operator all band (CW, Open, and Open QRP max 5 W output); Multioperator single Tx; SWL. Open means CW and phone. Use 80 — 10 m, and exchange RS(T) plus serial number. German stations will add their DOK (ie location code). Each station may be worked once per band per mode.

Score three points per QSO, and determine the final score by multiplying by the total number of DOKs from each band. Send logs, summary sheet, and duplicate check sheet (if 100 plus stations have been worked per band) to arrive by 20 November to: Klaus Voigt DL1DTL, PO Box 72 04 27, D-01023 Dresden, Germany. Logs on DOS disk are also welcome, if accompanied by a signed summary sheet.

CQ WW DX Contest

Phone: 28/29 October, 0000z Sat — 2400z Sun

CW: 25/26 November, 0000z Sat — 2400z Sun

Sponsored by *CQ Magazine*, these contests are undoubtedly the premier HF events of the year, and present the opportunity to work many rare countries and zones even with modest equipment. They are open to all stations world-wide, on 1.8-30 MHz (no WARC bands). Categories are: single operator; single operator low power (max 100 W output); single operator QRPp (max 5 W output); single operator assisted (for those using DX spotting nets); multioperator single transmitter; and multioperator multitransmitter.

Single operator stations can enter as single or all band, and can change bands at will. Multioperator stations must enter as all band. Multioperator single Tx stations must stay on a band for at least 10 minutes, EXCEPT that one — and only one — other band may be used during the 10 minute period, if — and only if — the station worked is a new multiplier. Multi Tx stations are exempt from this rule, but can only radiate one signal per band at any one time.

Exchange RS(T) plus CQ zone. Score three points for QSOs with stations in a different continent, and one point for QSOs with stations in the same continent (for VKs this means Oceania as defined for WAC). Stations in the same country or call area can be worked for additional multiplier credit, but have zero points value. The total multiplier is the number of DXCC countries plus zones worked. Final score equals total points times total multiplier.

Use a separate log for each band. Show new multipliers in the log the first time they are worked, and duplicates with zero points. Entrants are encouraged to include a "dupe sheet" for each band, which becomes mandatory for 200 QSOs or more. Computer logs are welcome, and must be in ASCII on DOS disk, using separate files for each band, eg VK7AAA.20 for a 20 m log; alternatively in K1EA "CT" .BIN format, eg VK7AAA.BIN. Label the outside of the disk with the callsign, the files included, mode, and category. Disks MUST be accompanied by a paper printout satisfying logging instructions. The committee may request a disk from high scoring stations to enable the log to be checked by computer, if the log originally submitted was a computer printout.

Include a signed summary sheet, showing power output for low power and QRPp entries, and send the log postmarked by 1 December (phone) or 15 January (CW) to: CQ Magazine, 76 North Broadway, Hicksville, NY 11801, USA. Indicate Phone or CW on the envelope. Numerous awards, trophies and plaques will be awarded to the leading entrants in the various categories and countries.

Result of 1994 RSGB 21/28 MHz Contest

VK4NEF was the only Oceania entrant, and came equal 21st with 585 points.

*PO Box 2175, Caulfield Junction, VIC 3175

Divisional Notes

Forward Bias — VK1 Divisional Notes

Peter Parker VK1PK

Technical Symposium on Soon

The 1995 Canberra Amateur Packet Radio Group Technical Symposium is a one-day event containing a series of lectures, discussion groups and forums on topics of interest to the radio amateur. The lectures are split into two streams, one aimed towards amateurs interested in the fundamentals, and the other aimed towards those interested in investigating topics in depth.

It will be held at the Hughes Community Centre, Wisdom Street, Hughes (near the shopping centre) on Saturday, 23 September. Registration starts at 9.00 am, while sessions commence at 10 am. A fully catered lunch will be provided and is included in the $30 registration fee. The symposium ends at about 4.00 pm.

Presentations and discussions on a variety of amateur radio topics (mostly packet-related) will be held during the day. Each participant will receive a copy of the Symposium proceedings.

If you have any queries, please contact Carl Makin (VK1KCM) between 8 pm and 10 pm (Canberra local time) weekdays on (06) 292-7057.

Junk Sale a Success

The VK1 Junk Sale, held to raise money for the replacement of our stolen repeaters, was an overwhelming success, with approximately four thousand dollars being raised. More than seventy people attended the event, which was held after the monthly WIA meeting.

Repeater Fund Grows

At the time of writing, the repeater fund stands at approximately six thousand dollars. The VK1 Division thanks all donors for their continued generosity.

A raffle, run by the VK1 Repeater Replacement Committee, was held recently to raise money for the Repeater Fund. Congratulations to Mike VK1MJ who won the prize, a digital multimeter kindly donated by Jaycar's Fyshwick store. The raffle, which was drawn at the July Divisional meeting, raised $131. The VK1 Division thanks Jaycar for providing the prize, and John VK2EJC for organising the raffle.

Possible Threat to Amateur Towers?

Canberra's National Capital Planning Authority has released a draft ACT Telecommunications Plan for public consultation. The plan applies to all ACT land, and aims to reduce "visual pollution" caused by radio transmitting towers. It was released in mid-July, and all interested parties have eight weeks to comment.

There is a possible risk that the plan could be applied to amateur antennas in residential areas, and not just cellular

telephone installations in non-residential areas. This is why I'm asking you to obtain a copy of the plan from the National Capital Planning Authority and make your opinions known by **15 September.** As the plan requires ministerial approval and must be passed by Federal Parliament, you should ensure that your local MHRs and senators also hear your concerns, where warranted. Remember, there is a Federal election coming up, and now is the ideal time to make the politicians work hard for your vote.

The address for the National Capital Planning Authority is 10 Brisbane Ave, Barton, ACT 2600. You can telephone the Authority on 271 2888. Faxes may be sent to 273 4427.

Earlier this year amateurs lobbied to oppose the SMA's new licence fees. Our efforts resulted in reductions being made to the fees initially proposed. Once again our activities are under threat, and it's time to make a stand. Though amateurs are very much a minority group, well-focussed and disciplined lobbying can bring results. Our ability to communicate, through broadcasts, packet radio and general conversation, gives us an advantage other community groups lack. I can promise that we will be using these media to the maximum extent possible, and urge all amateurs to obtain a copy of the NCPA draft plan so that we can construct reasoned arguments based on fact. VK1WI will keep you informed on further developments in this area.

VK1 Needs Your Log

If you participated in the Remembrance Day contest a few weeks ago, you are urged to send in your RD log **NOW** to ensure it contributes to a VK1 win in Australia's premier contest. Remember that you need to send in your full log for it to be valid. Logs should conform to the rules (July *Amateur Radio,* page 31) and be sent to RD Contest Co-ordinator, A Petkovic VK6APK, 26 Freeman Way, Marmion, WA 6020.

If you have any problems preparing your log and/or summary sheet, do not hesitate to ask for assistance. Remember that the deadline is 15 September, so you've only got a few days to get your entry in.

VK2 Notes

Richard Murnane VK2SKY

Who's Who on Council

The 1995-96 Divisional Council, elected at the July AGM, is now firing on all cylinders. For your reference, your elected Councillors and their portfolios are Michael Corbin VK2YC, President and Broadcast Officer; Peter Jensen VK2AQJ, Senior Vice President; Ken Westerman VK2AGW, Junior Vice President; Eric Fossey VK2EFY, Secretary; Eric Van De Weyer VK2KUR, Treasurer; Cesar Miranda VK2TCM, Member Services, Affiliated Clubs, Advertising and Publicity; Pieter Kloppenburg VK2CPK, Parramatta Property and Security, Trash & Treasure Sales; Steven Pullan VK2QZ, Broadcast Team Manager; Tony Liolio VK2ZLT, Dural Committee Chairman; Ian Rosser VK2XB, NTAC Committee Chairman.

It's worth reminding everyone that the well-being of the NSW Division depends heavily on many volunteers, to provide support for the amateurs listed above. Whether it's in a technical capacity, repairing equipment, helping run various Divisional events, reading a news bulletin, supervising exams, providing advice, wielding a paintbrush or broom, or stuffing envelopes, there's always something you can do to help make the VK2 Division that little bit better for everyone. You can tailor your involvement to suit yourself. As the saying goes, you get out of the hobby (or Institute) what you put into it.

Crossed Field Antennas

In late July, we were fortunate to receive, at short notice, a lecture from Professor Maurice Hately GM3HAT, one of the developers of the Crossed Field Antenna. The lecture was well-attended, and was recorded on video by Pat VK2JPA of the Gladesville Amateur Radio Club in Sydney. We'll have further details here when video editing has been completed. In the meantime, copies of the original patents and "Electronics and Wireless World" articles have been circulating around Sydney.

Fine Business, "Old Man"!

Also in July, a new Australian record was set in Sydney. A candidate sitting for the amateur certificate at Amateur Radio House passed the Novice Theory and Morse exams, but just missed out on the Regulations. Because this candidate was so keen to have another go, Pixie Chapple VK2KPC and Eric Fossey VK2EFY arranged another examination at short notice. This time, with a little advice on exam technique from Pixie, the candidate passed the regulations exam without difficulty.

What makes this particular individual stand apart from the crowd was not just his enthusiasm (although no doubt that helped), nor the fact that he breezed through the Morse sending test in one minute 38 seconds, error free (and just three errors on receive). No, what makes this particular candidate special is that he is just eight and a half years old, and he becomes the youngest amateur in the history of Australian amateur radio! Well done! I'm told that, by way of congratulation, his radio amateur father bought him a new Nintendo game system.

Our youngest ever amateur, who sports the rather fitting callsign VK2LAD, had his first contact with VK2 Divisional President, Michael Corbin VK2YC. Keep an eye out for him, and don't be surprised if you see him on the cover of *Amateur Radio* in the near future.

VK2WI on the Net(s)

Those of you who "surf the Internet" can contact the NSW Division by e-mail. The Division's address is wiansw@sydney.dialix.oz.au. You can send your club news items there, though the usual deadline applies, that is by close of business on the Friday preceding the broadcast. The Divisional packet BBS is being reincarnated as a TCP/IP switch (thanks in no small part to the Trojan efforts of Dave Horsfall VK2KFU/VK2ZTB).

For the past year and a half, Barry White VK2AAB has provided for NSW packeteers the "de facto" Divisional BBS, a service for which many of us owe him our sincere thanks. Early in August, Barry "retired" his BBS; until the Division's own system is fully operational, you can contact the Division on packet at VK2WI @ VK2OP.NSW.AUS.OC (thanks to Sysop Nat Cohen VK2OP).

On the subject of Divisional news bulletins, the VK1, VK2, and VK4 Divisions are now exchanging significant amounts of news on packet. One wonders if the other Divisions are interested in coming to the party.

Thought for the month: "The significant problems we face cannot be solved at the same level of thinking we were at when we created them." — Albert Einstein.

VK3 Notes

Murray Lewis VK3EZM

RD Contest: Controversy and Effort

Thanks are due to all who took part in this year's Remembrance Day Contest. But please remember that we need your log and summary sheet to be part of Team Victoria's entry to win again this year.

It was pleasing to hear the considerable increase in HF activity by VK3 stations, which will boost our score. Strong support was also evident on the VHF and UHF bands. Although the new rules for the contest are a handicap, our biggest problem may be the apathy about putting in entries. It is important for every VK3 who made at least ten contacts to submit a log and summary sheet. Do it now, this week, to avoid missing Team Victoria's

campaign to win the contest for a historical sixth time in a row. Check the rules, complete and sign the required declaration.

The contest rules were published in the July edition of *Amateur Radio* magazine on pages 30-31, and a photocopy of them can be obtained on request to the WIA Victoria office. Mark the front of the envelope "Remembrance Day Contest", and mail your completed log, summary sheet and signed declaration to the RD Contest Coordinator, Alek Petkovic VK6APK, 26 Freeman Way, Marmion, WA 6020. Entries must reach the contest coordinator by Friday, September 15.

Young Radio Amateur of the Year

The WIA Victoria Council are pleased to announce establishment of an award to recognise achievement of a young person in amateur radio/electronics during 1995.

All members and affiliated clubs are urged to obtain the necessary application forms, and to nominate a young person, 20 years of age or younger, whom they believe has made some outstanding achievement in amateur radio/electronics during the year. The person nominated does not need to hold an amateur licence, or need to be a WIA member, but must be resident in Victoria or in the Murray River border region.

Guidelines and details of the award are included on the application form, which is available from the Secretary, WIA Victoria. All applicants will receive a special certificate from WIA Victoria, and the winner will be announced and presented with prizes in February next year. Completed application forms must be submitted by 31 December 1995. The award will be presented each year, and is the first WIA award of this type in Australia.

80 Metre Band DX Window

A letter and questionnaire were recently mailed by WIA Victoria to 296 licensees who use frequencies between 3.750 and 3.900 MHz. The questionnaire was compiled by Peter Forbes VK3QI, and replies will aid preparation of a submission by the WIA to the SMA seeking expansion of the 80 metre DX window.

Encouraging responses have been received from the Department of Defence, Royal Flying Doctor Service, Australian Maritime Safety Authority, and other government users. Many commercial users have also replied promptly. The majority are supportive of the Amateur Radio Service having secondary use of the frequencies on a non-interference basis. Several objections have been raised by users in the Northern Territory and in Western Australia.

Results of the survey are still being correlated by WIA Victoria, who will provide a final submission on the DX Window for the SMA Liaison Team of the WIA to present to the SMA.

VK3BWI Broadcast

The WIA Victoria Council thank Dave Williams VK3KBA and Chris Platt VK3KCP, members of EMDRC, who have volunteered to produce six broadcasts a year for VK3BWI. Their commitment is for one broadcast every second month. But at least one other producer is still required to enable a fortnightly broadcast, which is not possible at present.

Thanks to Dave, Chris, and their club, for the offer to gather, edit and produce news and information for these half-hour broadcasts, and so increase the number of our production teams.

New Packet Node

VK3RNU-8 packet node is now fully operational in the VK3 packet network, and is providing a link from Mt Stanley to the VK2RCS wormhole in Albury and the VK2RAY node covering Albury-Wodonga.

Installation of the new node has

WIA News

Morse Code and the ITU Regulation

The Federal WIA ITU Conference and Study Group Co-ordinator, David Wardlaw VK3ADW, reported to the Federal Council at its July Extraordinary Convention that the New Zealand Department of Commerce, the authority which regulates the Amateur Service in New Zealand, proposed to have the October World Radio Conference in Geneva (WRC'95) consider suppression of the ITU regulation RR2735, which requires amateurs to pass a test in sending and receiving Morse code before being licensed to operate on the amateur bands below 30 MHz.

The New Zealand Amateur Radio Transmitters (NZART) does not support the proposal. NZART put a submission to the Department of Commerce that they not proceed with the proposal, but this was rejected.

The issue will be discussed at a forthcoming meeting of the Spectrum Management Agency's International Regulatory Advisory Committee (IRAC) meeting. The WIA is represented on this committee by David Wardlaw VK3ADW, the Institute's ITU Conference and Study Group Co-ordinator. David will be attending WRC'95 in Geneva for the Institute.

As this is a sensitive issue, the WIA Federal Council determined at its July meeting to develop an appropriate policy. Federal Councillors at the meeting reported that most WIA divisions did not have a current policy. The International Amateur Radio Union (IARU) policy says that the IARU neither proposes nor supports change to the Morse code requirement.

Meanwhile, comment circulating within the amateur radio community has raised concerns about the Australian Morse code examination syllabus.

These concerns revolve around the contents of the Spectrum Management Agency's 1994 RIB70 brochure which includes procedural signs such as question marks and oblique strokes in the telegraphy examination syllabus.

While these signs are included in RIB70, they have not been used in amateur examinations and the WIA, which sets the telegraphy tests, does not intend to use them. It is suggested that to teach or learn them in preparation for the licence examination is a waste of time.

The SMA has advised that they will be revising RIB70 in due course, in the light of the recent changes to the amateur licensing system and regulations.

considerably speeded up packet radio traffic from VK3RNU to Albury and beyond. VK3RNU-8 is a "hash node" which is only displayed by using the N* command. The node uses a Paccom Tiny-2 TNC donated by WIA Victoria. The site works were carried out in a joint project by the Northern Repeater Group and the Shepparton and District Amateur Radio Club.

For operational details on the node contact either David Harms VK3XDJ/VK3YDJ, Bruce Riley VK3ZSR, or Peter O'Keefe VK3YF. Thanks are due to this trio, who performed most of the installation work. WIA Victoria was pleased to assist with this necessary packet node, and appreciated the detailed submissions seeking its financial help.

Packet Reporting for Intruder Watch

The IARU Monitoring Service, or Intruder Watch as it is better known, is now accepting reports concerning intruders via packet radio. Observations must include frequency, time, mode and signal strength. A brief remark about the nature or content of the intruder's transmission will also help to identify it.

Gordon VK4KAL, who is the Intruder Watch Coordinator, writes a column in *Amateur Radio* magazine mentioning some intruders, and the successes in having them removed from the exclusive amateur bands. Gordon now welcomes reports via packet, and his packet address is VK4KAL@VK4UN-1.

Further information about Intruder Watch can be obtained by contacting Gordon at his packet address, or by a written request sent to Gordon Loveday VK4KAL, Freepost No 4, Rubyvale, Qld 4702.

VK6 Notes

John R Morgan VK6NT

July General Meeting

Packet radio has been active in VK6 for more than 10 years, so it is easy to assume that most stations can, and do, run this mode. In fact, only about 25% of stations are so equipped. It was, therefore, timely that, at the Institute's July GM, Phil VK6AD presented an introduction to "Amateur Digital Communications" to a well-attended gathering.

Phil's presentation began with an analysis of the digital nature of Morse code, and proceeded to analyse RTTY, AMTOR (both ARQ and FEC), SSTV, and packet radio. The various modulation methods involved were briefly described, and the combination of diagrams on the over-head projector, and appropriate "sound bites" from a portable cassette-player, was most rewarding.

The VK6 Division meets on the third Tuesday of each month, at the Westrail Centre, East Perth, commencing at 8 pm. The bookshop and QSL bureau open at 7 pm. All interested persons (members and non-members, licensed or listener) are encouraged to attend. Free coffee and biscuits are available at "half time".
Note: Members will be pleased to learn that Mark Bastin SWL has volunteered to fill the vacant post of Secretary, and should you need to contact him, the memorable telephone number is (09) 351-8873.

Special Station VI50NAVY

The Australian Naval Amateur Radio Society (ANARS) has been commemorating the 50th anniversary of the end of World War II, with a special amateur radio station, callsign VI50NAVY. From 0001z to 2359z on 20 September 1995, the callsign will be active in Perth. Listen on or around the usual ANARS frequencies of SSB on 3620, 7075, 10125, 14175 and 21175 kHz; CW on 3527, 7020, 10105 and 14052 kHz; and FM on 146.550 MHz.

A special QSL card will be available for contacts with VI50NAVY, by sending the usual details of your QSO, and a self-addressed **stamped** envelope, to PO Box 2018, KAMBAH ACT 2902, Australia.

Maintenance Visit to Hoddywell

On Sunday, 23 July 1995, your correspondent accompanied Will VK6UU and Jim VK6CA on their maintenance visit to the West Australian Repeater Group (WARG) site at Hoddywell, which is about 10 km South of Toodyay.

After an identification visit to the farmer who owns the site, access by car was quite easy, if a little rocky! The site is located on the top of a north-south ridge, offers a good view to the west, and a superb one to the east. The mast is approximately 50 m tall, and a small "tin" shed at its base houses all the equipment except the batteries; these live nearby, in an old 'fridge.

Normally, the VK6RHW voice repeater (147.275 MHz) can be linked to the VK6RLM (146.750 MHz) machine in Perth, but the UHF link had failed (at the Hoddywell end) some weeks prior to the visit. The problem was quickly located. Water had entered the link transceiver via the coaxial cable from its antenna. The "white fur" corrosion on the transceiver's PCB was not a pretty sight!

The site is shared with a commercial system, and both are solar-powered. Some months ago, however, the commercial system had been connected in parallel across the WARG's batteries. The 'fridge seemed to be full of red and black wires, of various cross-sections, joined at random! It took almost three hours, and yet another set of WARG batteries, to sort-out the mess, and separate the systems once more.

Upon leaving the site, all present agreed that a major maintenance visit will be required as soon as the weather improves, to re-work all the WARG's equipment at the site. If you wish to join the WARG, and so help support their network of repeaters, please contact Christine VK6ZLZ, who is the Membership Secretary, on (09) 458-6218, or via PO Box 425, Cannington WA 6107.

Club Secretaries (and Others!)

All material for inclusion in this column must arrive on or before the first day of the month preceding publication. Packet mail may be sent to VK6NT@VK6ZSE.#PER.#WA.AUS.OC, or write to PO Box 169, Kalamunda WA 6076, or telephone (09) 291-8275 any time.

"QRM" — News from the Tasmanian Division

Robin L Harwood VK7RH

The Internet has been in the news here lately and, as I pointed out in last month's column, this Division may be one of the first to have their own Internet address. It is *wiatas@tamarcom.com.au*.

The address has to be completely in lower case. Already this facility is being tentatively employed for executive traffic but is now being used for inter-Division mail. Now we have complete on-line access, we are getting instant turnaround instead of waiting for mail-polling as was the case previously. Thanks to John VK7AD for his assistance and enthusiasm to promote Internet. Last month's Southern Branch meeting had, I believe, a lecture on the workings of the Internet.

WICEN in Tasmania has been operating their own phone BBS for about 12 months now and has made arrangements with a Hobart BBS for the exchange of bulletins, files and PR traffic. "The Communications Nut BBS" will be online between 10 pm and 8 am on (002) 63 4424. The Sysop is Danny Moss.

The WICEN BBS is operational 24 hours a day on Phone BBS (004) 256 035. The e-mail address is VK7AX@3670/403.fidonet.org or, as it is in the Internet format, vk7ax@f403.n670.z3.fidonet.org. However, the Internet/Fidonet connection is unreliable these days. I am certain that the Northern part of the state will eventually be linked up with their own BBS facility very soon.

Over the winter months, there have been trials on 7 MHz, connected with the Sunday morning VK7WI broadcast. Normally a transmission is sent out from the northern half of the island. However, propagation being somewhat fickle, it is skipping about and missing various regions. To overcome this anomaly, a trial was conducted just 10 kHz down from 7090, carrying a relay of VK7WI and is based in the south. Results so far indicate that it is being heard well in VK3 whilst the northern one is rather flighty. Once the sunspot numbers increase again, I am certain it will become audible within VK7.

Meetings for the month of September are Southern Branch on Wednesday, 6 September at 2000 hrs at the Domain Activity Centre, VK7OTC; Northwestern Branch on Tuesday, 12 September at 1945 hrs at the Penguin High School, Dial Road, Penguin; and Northern Branch on Wednesday, 13 September at 1930 hrs in Room 17, Block "C", Level 3, Alanvale campus of Launceston Institute of TAFE. Note that if there is an alteration to this, you will be advised on the weekly VK7NB net on Wednesday evening on Repeater 147.000.

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WIA News

Changes at ARRL and RSGB

President of the American Radio Relay League since 1992, George S Wilson III W4OYI, resigned on 1 July citing health reasons. He suffered a stroke last February and is in a rehabilitation hospital in Indiana.

The ARRL appointed Rodney J Stafford KB6ZV to succeed George Wilson. A resident of San Jose, California, Stafford has been First Vice President of the ARRL since January 1992, and has performed the duties of League President since Wilson fell ill in February. Stafford is presiding judge of the Municipal Court in Santa Clara County, California. His wife, Patricia, is also an amateur, N6KLI.

The Council of the Radio Society of Great Britain (RSGB) on 8 July elected Peter R Sheppard G4EJP as the Society's President for 1996.

How's DX

*Stephen Pall VK2PS**

The ARRL DXCC Award Program was introduced in 1937, halted in December 1940, and restarted in 1947. Since then well over 60,000 awards have been issued to US and foreign amateurs and the number of DXCC countries has grown from 250 countries in 1940 to over 326 in 1995.

The decision to add a new, or delete an existing, DXCC country is made by the 16 members of the DX Advisory Committee (DXAC). These members make their decisions according to the rules of what constitutes a DX country, as detailed in Section 11 of the DX Century Club Rules.

Once the DXAC recommends approval of a new country, the recommendation goes before the DXCC awards committee, and they decide if the recommendation is accepted or not. If there is no recommendation for adding a new country to the list, the petition dies a natural death and the subject matter is removed from the agenda.

The non-approval as a new country of the Scarborough Reef DXpedition caused a very heated debate. It was mainly among US DX circles but there were a few overseas comments directed at the DXAC. Also, Martti J Laine OH2BH/VR2BH/AH3D, in a four page special supplement attached to issue 796 of *The DX Bulletin,* was highly critical of the negative decision by the DXAC. He titled his article "Has the DXCC Program come to the end of the road...by an Act of God?".

Packet radio and Internet DX Mailing lists were overcrowded with a variety of comments by individuals. Claims, counterclaims, retractions, confusion, alleged favouritism, distortion of the truth, alleged political bias, influence and/or consideration, the threat of resignation from committees and membership, "flaming" and "counter-flaming" (I assume that computer-heads know the meaning of these words), were freely flowing on the fibre-optic cables.

How do I know this, having no access to these facilities? A friendly amateur colleague showed me what goes on, on these computer generated communication channels. The situation was very similar to the packet radio war which, not so long ago, was a common day occurrence in some WIA quarters.

However, I did like the comment made by KA2DFO on the Internet: "To err is human, but to really foul things up, one requires a computer".

Libya — 5A1A

By the time you read these lines the Libyan activity by Ukrainian amateur operators is over. As usual with these rare DX activities, no advance warnings were given and the first filtered news was "scratchy".

It was in the last days of June the rumour spread that Toly UY3UY, Peter UT2UA, UT3UX and UX4UM would start operating from Libya on 2 July. Nothing happened. A fax from the UA group early in July stated that there was an official visit, that they were invited by the Bureau of Communications of Libya, they had a visa for 30 days, they intended to operate for 15 days and would leave on 24 July (which they did).

According to the Ukrainian group, the DXpedition was the result of three years hard work between the respective Ministers and Governments and they expected to receive an official licence to operate upon arrival. The team of four amateurs was accompanied by the Vice President of the International Youth League. However, the issue of the operating licence and the start of the activity was delayed until 13 July. The group was reported as being active on the 10, 15, 17, 20, 30, 40 and 80 metre bands, but they operated mostly in the CW mode.

Apparently they had two transceivers, an R5 vertical and some wire antennas. Signals were weak here in the Pacific and only a handful of VK and ZL amateurs were able to contact them. It was very difficult to overcome the US and Japanese "spectrum curtain".

The DXpedition operated from the new radio club station in Tripoli, and it was expected that they would leave their equipment behind for a possible future activity.

According to rumours again, they were not allowed to have SSB contacts with the USA; however CW contacts were flowing freely between the two countries. Some of the unconfirmed news sources said that they would be training Libyan operators in the club. Others said that they will train the Libyans in the Ukraine. Also it was said that there will be another Libyan amateur activity in September this year.

The QSL route is also unclear at this stage. Originally it was John Parrott W4FRU who was to act as a QSL Manager. However, by 15 July the QSL manager of their CW contacts was nominated as LZ2UA (Vlad Vladow, Box 100, 5600, Troyan, Bulgaria).

Unconfirmed Internet messages alleged that Toly was required to

"renounce" any contact with the USA and he had to arrange for a non-American manager as part of his negotiations to get an operating permission. Later reports said that cards for CW contacts should be sent to LZ2UA, but SSB contacts would be confirmed by OM3JW, Stefan Horecky, Mlynska 2, Stupava, IBV 90031 Slovak Republic. However, on 18 July on a 15 metre QSO, the Libyan operator said that the QSL for the SSB contact was to go via OM3IP. Hopefully, the QSL route will be cleared up in the coming months.

Your columnist, unfortunately, was not successful in contacting the 5A station. If I were you, I would wait with QSLing until the necessary documentation is accepted by the DXCC.

The expeditioners, once the activity is accepted by the DXCC, are looking for donations, as the trip was self-financed with the assistance of bank loans which have to be repaid.

Various other Libyan callsigns were heard during the activity in the vicinity of the frequencies used. 5A0UY, 5A4SB, 5A3UY, and 5A/UT3UY are suspected pirates.

North Korea — P5

The ARRL DXCC desk announced on 6 July that documentation for the P5/OH2AM activity has been approved. In accordance with a news release dated 16 July, North Korea (Democratic Peoples Republic of Korea) will now be added to the DXCC countries list.

This addition will increase the number of DXCC countries to 327. QSLs for this country will be accepted after 1 October 1995.

According to *The DX Bulletin,* this action will dramatically change the placings on the Honour Roll, unless there is another more extensive operation from North Korea before the next Honour Roll deadline. The 2000 top-of-the-Honour Roll-ers will drop back to the number two position and about 400 will drop off the honour Roll.

Martti Laine OH2BH, however, has stated that the next North Korean operation will take place before the Beijing Convention in October. It will be much smaller than his ZA activity, due to the delicate situation in North Korea.

Huang Yan Dao — Scarborough Reef

ARRL DX Bulletin No 35, dated 30 June 1995, carried an announcement that *"The DXAC (DX Advisory Committee) voted 9 to 7 against recommending the addition of Scarborough Reef to the DXCC countries list. Those who voted against the recommendation cited membership opinion within their respective divisions. Some went on to state an opinion that the rocks that comprise the reef do not constitute islands and for that reason no operation from the reef can be considered as* "land based". *Those who voted in favour felt that Scarborough Reef meets the criteria that was in effect at the time the petition was received.*

Several cited membership opinion in their divisions. In membership correspondence in accordance with the entire DXAC, 157 persons (72%) were against adding Scarborough and 61 (28%) were in support of the new country status. DXAC Chairman, Garth Hamilton VE3HO stated "the minimum size rule" *was not applied to this petition. DXAC members made a judgement in accordance with the DX communities they represent".*

Frank DL7FT, the well known DXer because of his past prefixes such as D68, S79, HU1, 5R8, J87, C56 and 6W6.

FM DXing on 10 Metres

Under the new regulations the opportunity is now given to two classes of Australian licensees to enjoy the thrill of DXing on the HF bands. The holders of Intermediate and Limited licences are now permitted to operate with 120 Watts pY on 10 metres FM in the frequency range of 29 to 29.7 MHz. This gives quite a good opportunity to work the world if conditions are right and you have the proper equipment.

Graham VK6RO is a long time devotee of VHF and HF FM DXing. He wrote me a lengthy letter of his experiences as an FM DXer going back 11 years. Let me quote from his letter. *"Back in the early 80s I would hear all these* "wobbly" *signals just above 29 MHz on my SSB/CW only rig. I was intrigued as to what they were, then I realised they were JA stations working locally. On 20 January 1982 I plugged my three hour old Kenwood TS-660 into my two element quad and called CQ DX at 1121 UTC on 29.600 MHz. To my great surprise, JE6QJV came back to me and we exchanged 5x9 reports. I was hooked. We all know FM is used on two metres for local work, and here I was talking to Japan on FM, the* "local" *mode.*

The technical aspects of FM on HF make for rather interesting propagation and signal reception. Phase distortion, or the capture effect by receivers, can make signals hard to copy, or stronger signals can completely swamp the wanted signal. If you want to be a true FM DXer you must be able to accept these limiting factors.

Some FM DX signals can give full scale readings on S meters. I have used powers as low as one watt to have contacts with friends in the UK on FM 29 MHz.

FM DXers around the world are a friendly group. Many repeaters exist around the world in the Philippines, USA, JA, VK and various European countries. Some repeaters are linked to local two metre inputs. It seems unusual to work an amateur in his house watching TV in Hungary using a two metre handheld.

Being a serious FM DXer involves many hours of waiting for openings and looking for new countries. My total of DXCC countries worked on 10 metres FM now stands at 132.

Most FM DXers follow some rules concerning FM HF DXing and the most important is to QSY from 29.600 MHz immediately upon establishing contact.

The international frequency for calling DX is 29.600 MHz and local ragchews should not be carried out there. You might

not think the band is open, but it could be, and your local ragchew could prevent DX contacts. Please keep an ear out for me on 29.600 FM mode. I usually QSY to 29.510 MHz and I hope to meet you on the band."

So ends the story of Graham VK6RO, a keen DXer on 10 metre FM. What about you? Now is the time to make preparations for the expected improvements on the 10 metre band once we start the new solar cycle sometime in 1996.

Australian Amateurs ARRL DXCC

Looking through the pages of the July issue of the ARRL magazine *QST,* it is interesting to look at the DXCC Honour Roll listings for 1995.

This year it takes five pages to list the more than 3,800 individuals making up the record of 6,004 Honour Roll listings. Based on the 7,800 plus individuals who made up the 1994 annual list it appears that 49% of all active DXers are now on the Honour Roll.

Further research shows that 1,375 individuals made up the 2,004 listings of the "Top of the Honour Roll" for the various modes. This would indicate that 360 of those on the Honour Roll have worked all the DXCC countries.

To be on the Honour Roll you must have at least 317 countries confirmed from the present total of 326. In other words, you must have a total confirmed country count that places you among the numerical top ten DXCC countries of the current DXCC countries list. To be on the Top of the Honour Roll means that you have worked all the DXCC countries.

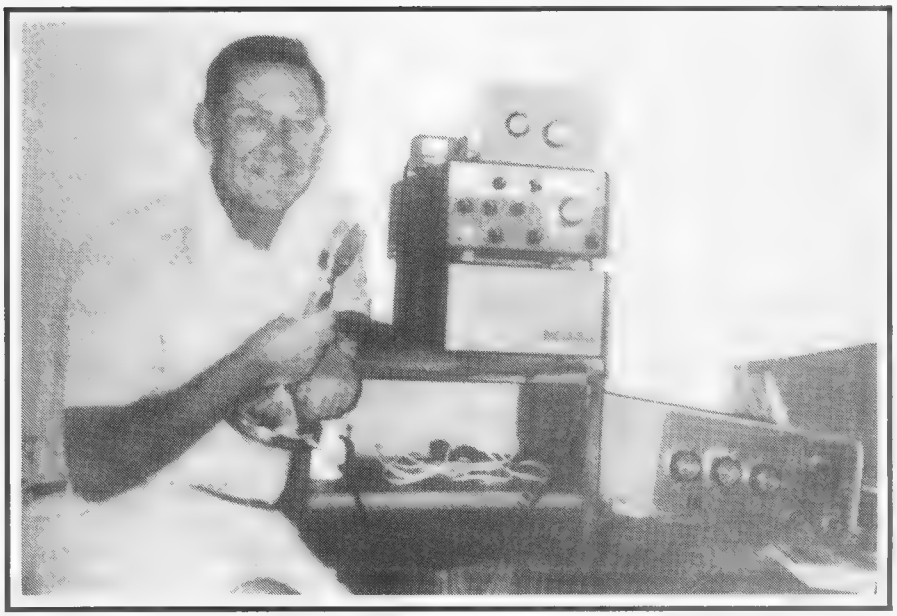
Below is a roll call of Australian amateurs listed in July 1995 QST for the ARRL DXCC Honour Roll list in the Mixed, Phone and CW modes.

Mixed Top of the Honour Roll (326) VK3DYL, VK5WO, VK6HD, VK9NL, VK9NS. Honour Roll (325) VK1DH, VK5QW. (324) VK2FH. (318) VK3AKK. A total of nine.

Phone Top of the Honour Roll (326) VK3DYL, VK5MS, VK5WO, VK6HD, VK6LK, VK9NL, VK9NS. Honour Roll (325) VK4LC, VK5QW, VK6RU. (324) VK1ZL. (323) VK3SX. (322) VK1DH. A total of thirteen.

CW Top of the Honour Roll (326) VK9NL, VK9NS. A total of two.

The ARRL DXCC Year Book of 1994 lists all the amateurs who reached DXCC status (confirmed at least 100 DXCC countries as at 30th September 1994). The number of Australian amateurs listed in the various sections is Mixed 12, Phone 19, CW 5, RTTY 1. 160 metres 1, 80 m 1, 40 m 1, 10 m 1, 6 m 1. A total of 24 VK stations for 43 listings.



Brian 9J2BO who can be found on the ANZA net almost every week.

Future DX Activity

- F5XL will be active from Corsica for two to three weeks in September, including many of the islands surrounding Corsica.
- The proposed Kermadec activity of ZL amateurs, according to rumours originating from New Zealand, has been postponed to May 1996.
- Sergio PU0TRI is active on Trindade Island but can operate only SSB on 80 and 10 metres. QSL to PU1LOK.
- At present there are three Russian stations active on Franz Josef Land, RX1OX/FJL, R1FJC and R1FJZ.
- Nicolai 3W5FM has been heard from Vietnam on 14195 kHz around 1330 and 1930 UTC.
- It is rumoured that Barry, of Kermadec fame, ZS1FJ/G4MFW, is planning some activity from C30 Andorra.
- Adam A92MM is very active from Bahrain on 20, 17 and 12 metres SSB/CW. QSL to Box 116, Manama, Bahrain, Persian Gulf.
- Karl YS1ZV is active on 10 to 40 metres, including WARC bands. QSL to KB1PQ.
- Larry operates from Mali as TZ6VV on 20 and 10 metres. QSL via AA0GL, or Larry's direct address, Larry Erwin BP2786, Bamako, Mali, Africa.
- Andy VP8CQS is active on 40 metres CW on 7004 kHz around 2100 UTC. QSL via DL1EHH
- Easter Island (as previously announced) will be active from 2-23 Sept on all bands with the callsign XR0Y, and the Sala y Gomez activity will be under the callsign of XR0Z. QSL for both operations to WA3HUP.

Interesting QSOs and QSL Information

- OA4COZ — George — 3798 kHz — SSB — 0732 — June (E). QSL Bureau.
- 6Y5KF — Ken — 7020 kHz — CW — 0800 — June (E). QSL Bureau.
- YJ0ALS — Koji — 14024 kHz — CW — 0615 — June (E). QSL to Koji Endo, 66-2, Kusonoki, Naka, Kakamigahara, Gifu, 504 Japan.
- XE2Z — Gaby — 7047 kHz — SSB — 0724 June (E). QSL to Gabriel Valdez, PO Box 65, Tijuana, Baja California, Mexico.
- H44FB — Fred — 14200 kHz — SSB — 0740 — June (E). QSL to PO Box 986, Honiara, Solomon Islands, South Pacific.
- C21JJ — John — 14164 kHz — SSB — 0518 — July (E). QSL to John, PO Box 518, Republic of Nauru, Central Pacific.
- OH0XX/DU1 — Olli — 7002 kHz — CW — 1148 — July (E). QSL to Olli Rissanen, PO Box 373, Ayala-Alabang Village, 1799 Muntinlupa, Metro Manila, Philippines.
- HG100R — 14223 kHz — SSB — 0059 — July(E). QSL to HA1KSA, Radio Club Gyor, Box 79, H-9002, Gyor, Hungary.
- YT50AT — Zika — 14195 kHz — SSB — 0444 — July (E). QSL to YU1SZ, Zivota Stanojevic, Box 21, 37210 — Cicevac, Yugoslavia.
- YW5LO — 7002 kHz — CW — 1055 — July (E). QSL to WS4E, Scott M Cronin, 1909 N 41st Ave, Hollywood Hills, FL-33021, USA.
- OK1EE/OD — 14018 kHz — CW — 0430 — July (E). QSL to OK1FMR,

Martin Picek, Vancurova 158, CS-56301, Lanskroun, Czech Republic.
- BV9G — 14023 kHz — CW — 2308 July (E). QSL to BV8BC, Sky Chen Box 222, Taitung, Taiwan, Republic of China.

From Here There and Everywhere

- One has to be lucky sometimes. King Hussein JY1 was active on 22 and 23 June at 2200/2300 UTC on 14240 kHz, working the USA via a list operation by WA3HUP his QSL Manager.
- 7W5J was activated by Moctar 7X5JF to celebrate Algerian Independence Day on 5 July.
- 8S3BG marks the 50th anniversary of the Swedish Sundsvalls Radio-amatorer Club. QSL via the SM QSL Bureau.
- The 5th World Lithuanian Sports Games were held in July and August. Some Lithuanian amateurs used the prefix LY95 during that period.
- ZS42SQN special call is active from 16 Sept to 8 October celebrating the 50th anniversary of the 42nd Swarkop Airbase in South Africa.
- Scott VE7QT was active for about three weeks (end of July to mid August) from Pitcairn Island as VR6QT. Scott is a highschool chemistry teacher and his ambition was to visit this remote Pacific island so rich in history. If you worked him, send your direct QSL card with return postage to Box 1622, Grand Forrks, BC, V0H-1HQ, Canada.
- Message to the holders of the special callsigns VI2CQ, VI75CUB, and VI2JC. Please send me a SASE for forwarding QSL cards to you, which were sent to me by mistake. My address is at the end of this column.
- About 140 Spanish stations are now authorized to be active on 6 metres in the frequency range of 50.000 to 50.200 MHz only on SSB and CW with the prefix EH.
- Doug N3ADL and his friends will be active on 28 and 29 October from Antigua using the call V26B. QSL to WT3Q.
- David T30DW will be in Kiribati for the next two years. QSL to PO Box 29, Bairiki, Tarawa, Republic of Kiribati, Central Pacific.
- If you worked Oli YO/DL9ABF/p on the weekend of 29-30 July, he was operating from the Castle of Dracula in Transylvania.
- FW0DX, asking that cards to be sent to F6FNU, is a suspected pirate.
- ET3AA can be heard around 0200 UTC on 14,224 kHz. QSL via PO Box 60258, Addis Ababa, Ethiopia. ET3YU can be heard on CW on the low end of 20 metres. QSL to YU1FW.
- AP2JZB can be heard often on 15, 17 and 20 metres SSB. QSL contact point is K2EWB.
- Gene VE7GAS/VP9 will be active from Bermuda for the next two years, mainly on 20 metres SSB. QSL to Gene Graham, Unit 26, Waters Edge, St Georges, GE05, Bermuda.
- Jose TI9JJP will be on Cocos Island (Pacific) from 4 to 20 October. QSL to Jose Pastora, PO Box 330, 1000 San Jose, Costa Rica.
- Just as I was closing this column, Alan VK2FH phoned me to say that the Aves Island card, YW0RCW, had arrived in the mail. This is good news for many of us who are still hoping to get a QSL card for a contact made more than a year ago. Incidentally, the local newspaper ran quite a lengthy article on VK2FH's amateur radio activity which was followed by an interview on the air by the local FM community radio station.

QSLs Received

TY1IJ (6 w — DK8ZD); A71CW (2 m — op); 9K2MU (6 w — WA4JTK); 5R8ED (4 w — LA1SEA); 9X5EE (5 w — PA3DLM); YW0RCW (12 m — YV5AJ).

Thankyou

This column was made possible with the help of VK2CJH, VK2FH, VK2KFU, VK2TJF, VK5WO, VK6RO and the following publications, *QRZ DX, The DX Bulletin, The DX News Sheet, Indexa News Bulletin* and DX Enterprises, publishers of the *GOLIST* QSL Managers list.

73 and Good DX.

**PO Box 93, Dural NSW 2158*

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International Amateur Radio Union Monitoring Service (IARUMS) — Intruder Watch

*Gordon Loveday VK4KAL**

What is IARUMS?

The International Amateur Radio Union Monitoring System (IARUMS) is set up to record, report, and encourage the removal of non-amateur stations from amateur band allocations. Stations targeted are usually broadcast or commercial stations from other countries. Priority is not given to local "pirates". Each country appoints a Co-ordinator, who is responsible for collating reports and forwarding them to the appropriate regulatory authorities (the Spectrum Management Agency in Australia).

Each WIA Division, apart from VK3, has a Divisional Co-ordinator to collect reports from that Division and forward them to the Federal Intruder Watch Co-ordinator. But the main strength of the service is in the individual amateurs who spend time regularly listening on the bands and identifying types of signals and stations.

More Intruder Watch listeners are always required. Volunteers who contact either their Divisional Co-ordinators or me direct will be supplied with information, log sheets and tapes to assist in identifying modes.

Observations Required

Information is required urgently from observations of the following frequencies:
14.122 MHz — two letter callsign — A1A
14.258 MHz — hand sent CW — (A1A) random groups
14.292 MHz — SITOR — any information at all — text or whatever!
7038.6 kHz — hand sent CW — (A1A) random groups.

Please report your observations to me either by Freepost, or via my packet address below.

**Federal Intruder Watch Co-Ordinator, Freepost No 4 Rubyvale QLD 4702 or VK4KAL@VK4UN-1*

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Update

Cover of August *Amateur Radio*

I hope that owners of IC-225 transceivers were not too disappointed when, after noting that the cover suggested the magazine contained an article "ICOM IC-225 Revisited", they discovered the article was about the ICOM IC-22S.

My apologies for the very prominent "typo"!

It might be a good idea to correct the cover note on your copy of the August 1995 issue of *Amateur Radio* now.

Bill Roper VK3BR
Production Editor

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Packet World

*Grant Willis VK5ZWI**

Introduction

This month I thought I would provide an insight into what makes up a packet BBS station. In particular, I will look at the VK5TTY system in Adelaide and show how it all fits together.

The packet glossary that was mentioned in July is still in production, so I am hoping to place it in a later edition of *Packet World*. To assist in this project, I would be happy to receive, via packet radio, words or terms that packet users would like explained that would be worth including in such a glossary. Please send these in a personal message to GLOSS@VK5TTY.#ADL.#SA.AUS.OC.

Insides of a BBS station

One of the first packet radio services many people come into contact with is a "Bulletin Board Station" (BBS). These stations are responsible for handling the personal mail and bulletins carried by the packet network, as well as providing many of the specialised services available. Often, users may not be aware of what goes into a BBS installation, in particular a remotely operated one. To give you some idea of what a BBS station might consist of, let's take a look at one of the typical BBS stations in Adelaide, VK5TTY, operated by the South Coast Amateur Radio Club.

The History of VK5TTY

VK5TTY has been operating for about six years in various forms. Initially it was the RTTY BBS serving Adelaide, back in the days before packet became popular, with the packet access as a sideline. VK5TTY was used as the development platform for the RTTYGate BBS software written by Andrew VK5EX and myself. Access to the RTTY BBS was via the VK5RSV repeater on 146.675 MHz, with packet operating on 147.575 MHz. Later, as packet radio's popularity grew, VK5TTY moved to 144.900 MHz and a 439.050 MHz UHF radio was added, enabling linking with the VK5WI BBS. Packet Mail forwarding via the dedicated UHF link begun in Adelaide during 1990.

Initially, the computer used at VK5TTY was an Amstrad-1512 PC-XT with a 10 Mb hard disk and 640 kbytes of memory driven by an NEC V30 processor. At the time the machine was purchased, it cost close to $1000 (circa 1988). The RTTY modems were based partially on the designs featured in ETI magazine several years before, and the packet TNC in use was a Shepparton TNC-220+. The early

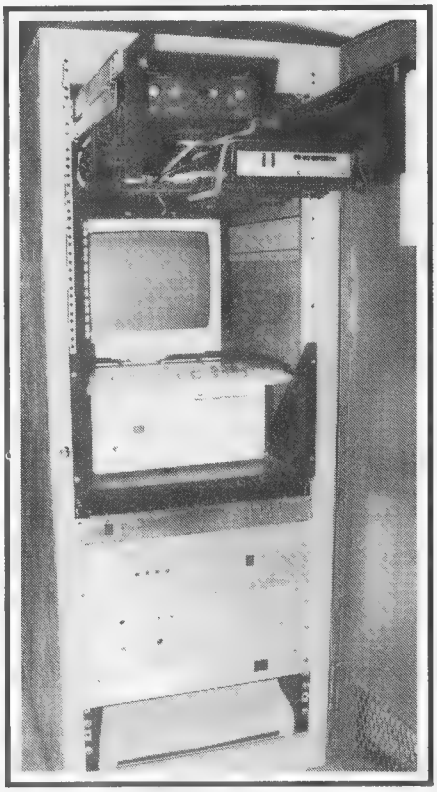

Photo 1 — The VK5TTY BBS equipment rack (see text).

antennas were three five-eighth wave verticals on 2 m, supported on short poles.

In 1992, moves were finally made to upgrade the computer and most of the other hardware in the system.

Present Hardware

Today, VK5TTY supports operations on 1200 baud packet (144.900) and 45-110 Baud RTTY (147.525 MHz simplex). It has a UHF link to the Adelaide BBS Network on 434.050 MHz (4800 Baud horizontal polarisation) and a planned UHF 4800 baud user port for 439.075 MHz. The system is located on O'Halloran Hill which divides Adelaide's southern suburbs from the Adelaide Plains.

The VK5RSV RTTY repeater has also been rebuilt and became a multi-mode system in 1993. It was also relocated to Willunga Hill about 25 km south of its original site.

VK5TTY's antennas are now carried on a 12 m guyed mast. The main transmit antenna consists of a "Dual Band J-Pole" located at the top of the mast which carries 144.900 and 439.075 MHz packet. A second Dual Band J-Pole installed at approximately 2.5 m provides the 147.525 MHz RTTY service and a spare UHF antenna. The 434.050 MHz UHF link uses a 10 element horizontal Yagi.

The current computer system is based on a 80386 DX 40 MHz PC with four megabytes of memory. The hard disk can now hold up to 120 megabytes and the TNCs used are DRSI PC*PA 8530 based HDLC cards allowing a total of four packet transceivers to be connected to the system.

The equipment rack (shown in photos 1 and 2) also houses a number of pieces of ancillary equipment. Photo 1 shows the front of the rack where, from the bottom up, there is a fan box (cooling and dust control), AC power distribution box (also includes a mains line filter), and 2 x 10 A 13.8 V DC power supplies (in the next box). Above the power supplies is a box containing the RTTY modems, transmitter watchdog timers and a remote command reset controller.

The box immediately below the computer houses the 4800 baud packet modems (with capacity for three high speed modems). Above the computer is a roll out radio rack where the transceivers are mounted. On VHF, Philips FM828As are used, while on UHF, Philips FM747s are presently used.

Photo 2 shows the rear of the rack including the two VHF cavity filters (which

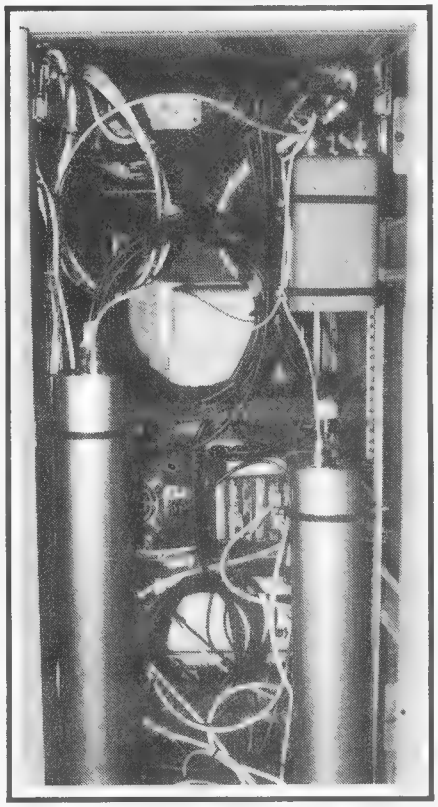

Photo 2 — The rear of the VK5TTY BBS equipment rack, clearly showing the cavity filters.

allow 144.900 and 147.525 MHz to operate together at the one site without receiver overload), and a UHF cavity which is used on 434.050 MHz to help separate it from 439.075 and the local ATV repeaters. A second UHF cavity will be added when the extra radio is installed.

Present Software Facilities

The present software facilities are quite extensive. There is a full service FBB BBS system providing access to electronic mail, bulletins and file transfer facilities. This program also provides access to satellite tracking servers, usage statistics and various other servers that are being developed. Many people on the packet radio network will at some stage have already come across the FBB program, as it is in very wide use across the network around the world.

The RTTY Gateway BBS software is still operational, allowing RTTY users to send and receive packet mail. The RTTY BBS is accessible at its default speed of 50 baud and can then be commanded to switch to one of a number of speeds between 45 and 110 baud. The other major software services provided on VK5TTY include TCP/IP and NET/ROM networking.

NET/ROM services are provided by the G8BPQ NET/ROM switch software, which also doubles as the software driver for the DRSI PC*PA TNCs used by the system. The TCP/IP capabilities are provided through the NOS package, which is multi tasked on the same computer as the FBB program. The particular version of NOS used is known as JNOS version 1.10bX written by WG7J (with local enhancements added by VK5XXX). TCP/IP services available include the "Converse" conferencing network, POP3 electronic mail delivery, SMTP mail delivery, Telnet login access, FTP file transfers and IP routing between all available radio ports.

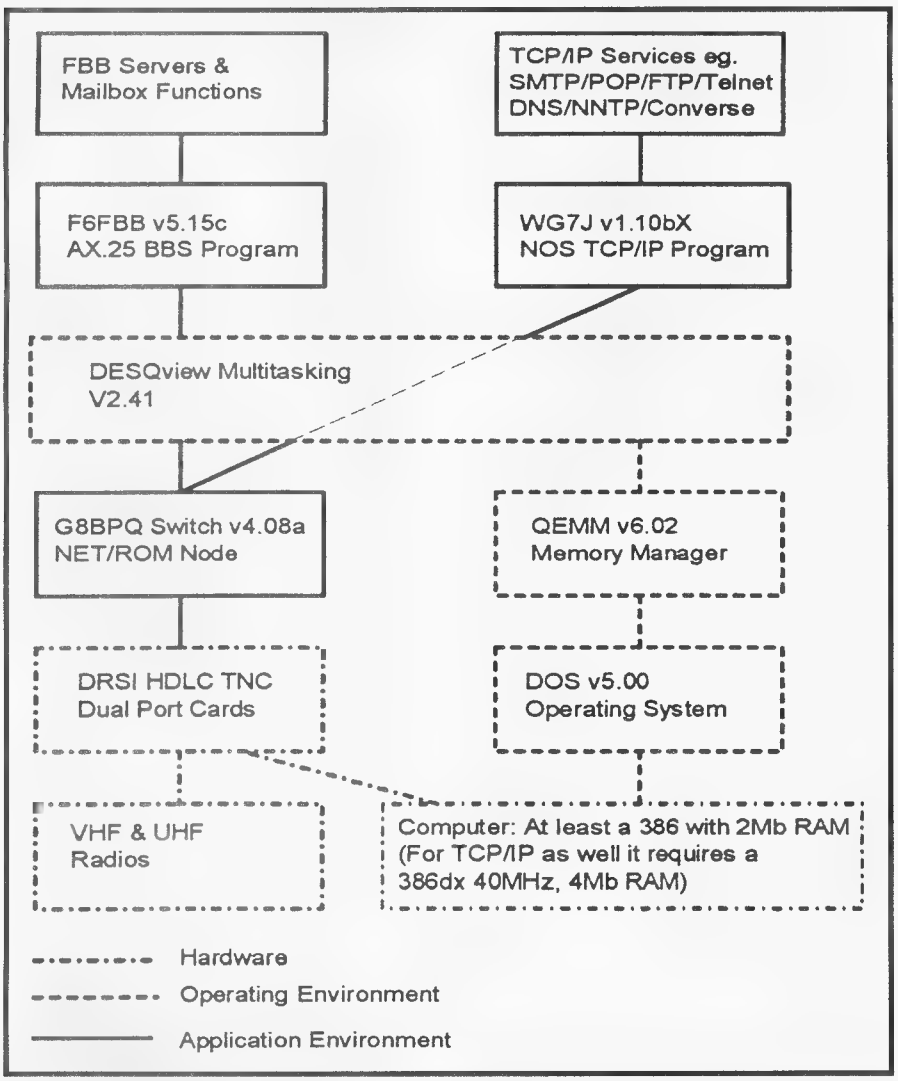
FBB Servers & Mailbox Functions
TCP/IP Services eg. SMTP/POP/FTP/Telnet DNS/NNTP/Converse
F6FBB v5.15c AX.25 BBS Program
WG7J v1.10bX NOS TCP/IP Program
DESQview Multitasking V2.41
G8BPQ Switch v4.08a NET/ROM Node
QEMM v6.02 Memory Manager
DRSI HDLC TNC Dual Port Cards
DOS v5.00 Operating System
VHF & UHF Radios
Computer: At least a 386 with 2Mb RAM (For TCP/IP as well it requires a 386dx 40MHz, 4Mb RAM)
Hardware
Operating Environment
Application Environment

Figure 1 — Block diagram of the layout of the VK5TTY BBS software sub-system and hardware.

All the software is managed using a combination of DOS 5.00, DESQview multi tasking and QEMM memory management. Figure 1 shows a block diagram of the layout of the software sub-system as well as the hardware.

Conclusion

VK5TTY BBS is only one example of a BBS station. Each system will be configured differently, and provide various combinations of services. The basic requirements, eg power supplies, computer, TNCs, antennas and radios, remain the same, however.

Hopefully this has given an appreciation of what goes on. If you are thinking of building your own BBS, you must keep in mind the responsibilities that go with that and, if you are in an area already well serviced by BBS stations, consider whether the extra service is really required. Most of all, if you are going to start up a new BBS, discuss it with your neighbouring SysOps. They are likely to know many tricks and tips that will assist you.

The Changing Face of the Amateur Packet Radio Network

To finish off this month's column, I want to make mention of some activity that has appeared on the packet network increasingly in 1995. There are some new trends that appear to be creeping into the network with regards to the types of material that people are posting.

Specifically, there is an increasing instance of personal attacks being made on people across the packet network. Recent examples have been particularly noticed as they were distributed to VKNET (which covers all of Australia, New Zealand, New Caledonia and the Solomon Islands). Such attacks are surely NOT in the spirit of amateur radio. What's more, they put the operators of BBS stations throughout the region in a very awkward position with regards to carrying such traffic, particularly when the traffic falls into grey areas within the Amateur Service Regulations. It is very easy for people to sit behind a keyboard and write things these days for general consumption. Just remember, folks, that there are also real people at the other end of the connection, and that you should treat them as such on air.

Traffic volume generated by individuals is another growing concern. This is particularly a problem for regions that are only served by HF forwarding services. Some stations are generating vast quantities of material in short spaces of time. The result has been effectively to monopolise the limited HF bandwidths available to some regions. Tasmania,

South Australia, Northern Territory and, to a lesser extent Western Australia and parts of Queensland, all rely on HF services. Please be considerate.

If you do have a large series of articles, or large single messages, that you feel all of VKNET would be interested in, please consider the following guidelines:

1. Only send a maximum of 15 kb total bulletin traffic a day;
2. Keep each individual part of a series to less than 3 kb;
3. Make sure the article's scope fits within the broad definitions of the Amateur Radio Service in Australia; and
4. Don't post long series to WW — it is rare that all parts of a long series will achieve full distribution. (Also remember that WW traffic is not always accepted by some BBS stations).

A more equitable share of limited resources will be possible for everyone if these simple guidelines are observed. Please respect the fact that HF networks exist, and will be with us for some time to come. If you really do want to send large quantities of material regularly, keep its distribution within an area totally served by VHF networks (eg @VK2).

Finally, a reminder to all packet operators appears to be warranted regarding FOR SALE, DISPOSAL ETC ETC style bulletins and personal mail. Such items are ILLEGAL on the Australian Packet Radio Network. Do not post such bulletins or send personal messages relating to such activities. Such traffic may be permitted in other countries but not here. There is a clause in the regulations that directly prohibits this traffic.

These trends, if not reversed, are potentially detrimental to the packet network in Australia. The abuse the packet network has received in recent times has only harmed its image. All packet radio operators should remember the wording of the Amateur Regulations and consider the nature of the packet network before posting bulletins and personal mail. Operators should also remember that there wouldn't be a packet network if it was not for those who set up and operate the BBS and repeater networks. Please be considerate when using the network.

*C/o GPO Box 1234, Adelaide SA 5001
Packet: VK5ZWI @ VK5TTY.#ADL.#SA.AUS.OC
Internet: gwillis@eleceng.adelaide.edu.au
ar

Pounding Brass

*Stephen P Smith VK2SPS**

As promised, a number of book reviews will appear in coming issues. However, in this issue I will introduce you to a number of selected poems I have accumulated over the years. Some of you should be familiar with these, others not so. *(Some have been published in Amateur Radio before; the first one on several occasions. Ed)*

The first poem I believe to be an Australian classic, "Coming Round The Bend", probably better known as "CRTB". It was written by Frank Spruhan, known by his contempories affectionately as "SPRU". Spru was one of those telegraph legends one hears about while pounding brass. In the 1960s a collection of his works was published. Spru put many of his thoughts about the Telegraph service into verse, and CRTB is one such poem.

Spru, who became a silent key in 1965, rested in the Jiliby cemetery in an unmarked grave until November 1988, when the Sydney based Morsecodian fraternity decided Spru deserved something better. They arranged to place an inscribed headstone on his grave, something of which Spru would have been very proud.

Coming Round the Bend

I well remember Charlie Teede,
Who used to work the races;
No need, indeed, to ask for speed,
He'd pace it with the pacers.
Lord help the man who broke him once
Or questioned his "creations";
On him a flood of scorn was turned,
The atmosphere with brimstone burned
And Pitman, green with envy, squirmed
At his abbreviations.

"Te field got wl awa to ti
& as ty settld dwn
Te Shicer 1st t bk te li
Ws flwd bi Jo Brown.
In close proxim ws Tired Tim,
Tn cme Arbtatn,
Bhnd te bunch ws Cntr Lunch,
Gd luck and Hi Taxatn.
Ty whizzed alng (and so did Charles)
Wthout te least cessatn.

Crtb te topwt jumped
& got on trms wi Shicr,
Wo tn & tre hs bundl dumped
Wh labld him a twicer,"
I scrambled after Charlie
Like a trailer round a bend,
Then gave OK — but queried
"CRTB" u send.
Now what is that in aid of?
Enlarge a bit my friend."

The sounder nearly hit the roof
As Charlie scorched the line.
"U ort t b on te rabtproof
Or up at Doodlekine.
Chasin poddies rnd t yd
Shd b ur chf pastime.
T tnk u cndt wrk tt out
It nrly mks me sik.
Ani ole gin or rousabt
Cd write it wi a stik.

Fanci a man wo calls hmslf
A tgst askg tt!
A record O S vacuum
Is located neath ur hat.
D'u want it in oils bi Lambert?
Or carved on a marbl stone?
Ole "Winja" Mortill cd tke it
& ud nvr hr a moan;
Not spelt out li Ive dun fr u
Bt cut dwn t te bone.

"We I mst sa te bst dspla
Of ignrce Ive hrd,
O all te sqrts in W A
Ur crtnli te "bird"
& ani hrsh remks Ive mist
Ty all cn b inferd
"CRTB" — its knwn bi rote,
Wt wd u ha me snd?
Its cmg rnd te bnd — u goat,
Coming round the bend!"

The following poems are from the 1900's era.

That Station

Of all the stations I have worked,
This station is the best.
A "Haunt" for all the lazy boys
And those who need a rest.

Hard at work at six o'clock,
Off come coats and vests,
You carry in a pile of wood
To smoke away the pests.

These pests are mainly different bugs,
(The skeeters are the worst),
And on the war-path all the time
For naught but blood they thirst.

With head phones on at seven bells
You shoot some N-I-Ls.
The spiders get so thick just then
You pray for shrapnel shells.

At eight o'clock the "Larm is set,
To wake you up for lunch;
You dim the glim and pull the shades —
And roll up in a bunch.

At one o'clock you Q-R-U,
And set the clock for four;
To get that M-S-G report,
The P & O waits for.

At four o'clock your work is done,
You've got that M-S-G;
So nap till six, then doctor up
That log, artistically.

The above poem was written by D Phectiff Inslater, published in Wireless Age in November 1915, and re-published in *Morsum Magnificat* in October 1994 *(I think R Kover also had something to do with it! Ed.)*

Ode to a Wireless Operator

When the air is fine and balmy
And the ether's free and clear
And the sigs come in like thunder
With a biff that jars the ear,

Then the PBO* is happy
And he wears a sunny smile
And doesn't curse the traffic
That keeps coming all the while,

But when the X's come on steady
With a sizzly frizzly roar
And the sigs die down to nothing,
Then the common Op gets sore

And the language that he uses
Melts the contacts off his key
Burns the "Bradfield" to a cinder
Leaves the aerial hanging free,

And the Old Recording Angel
Wears a stern and saddened look
As he logs the bad Op's language
In the big Recording Book.

* *(PBO = Poor Bloody Operator)*

The above poem was written by Harry Pearson of Sable Island in 1905 and was re-published in *Morsum Magnificat* in 1992.

Infatuation

O mystic fascination,
O fate idealised,
I'm but a mass of molecules,
Reversely polarised.

I'm vanquished by sorcery
No amulet can cure,
For love, you are the magnet,
And I the armature.

The more I circle round you,
Love's current stronger grows,
Till leaping forth from heart to heart,
Love's arc electric glows.

Against the ardour of that flame,
Insurance won't insure,
For, Love, you are the magnet,
And I the armature.

The messages un-numbered,
Of fond endearment fly,
At once,in all directions,
The wireless they outvie.

A throbbing heart is at the key,
Its dot and dashes sure,
For, Love, you are the magnet,
And I the armature.

I dwell within your field of force,
In that blest region where,
Your strength is to the distance,
Inversely as the square.

No influence external,
Can me from you allure,
For, Love, you are the magnet
And I the armature.

At last we'll cling together,
Apart no more to roam,
With hearts attuned harmonic,
We'll sing of ohm, sweet ohm.
One circuit never broken,
While life and love endure,
Forever you the magnet,
And I the armature.

This poem was written by Park Benjamin, was published in Wireless Age in 1915, and appeared in the April 1994 issue of *Morsum Magnificat.*

And finally a short one from the "Air Signallers" of World War Two, credited to John Hall G3KVA, and which appeared in the August 1994 issue of *RadComm.*

The Air Signallers Prayer

In days of old,
When W/Ops were bold,
And sidebands not invented,
The word would pass
By sounding brass,
And all were well contented,
Amen.

I hope you enjoyed the poems as much as I did.

PO Box 361, Mona Vale NSW 2103

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Over to You — Members' Opinions

All letters from members will be considered for publication, but should be less than 300 words. The WIA accepts no responsibility for opinions expressed by correspondents.

Loss of Hudson A16-198

I am assisting in research into the loss of the above aircraft near Byron Bay on 6 July 1942. I would like to hear from W/T operators or radio trades of the day as to whether Hudsons were fitted with radio compass equipment, and whether an MF beacon was operational in July 1942 at Archerfield, Amberley or Evans Head.

Of course, any information or reminiscences from 32 Squadron members of the time, who might have information about the flight, would be greatly appreciated.

Ron Burr VK4BUR
16 Don Street
Lowood QLD 4311

Ex-RAAF, Maryborough, Queensland

A reunion is proposed for all airmen and airwomen who served at the RAAF Station, Maryborough from 1941 to 1946. They will be from all the musterings which went to operate the Training Schools for Wireless Air Gunners, Radar Mechanics and Recruits. It will be centred around the weekend of 20 and 21 July 1996 and will include a welcome, an evening dinner, an airport revisit and other functions, but the emphasis will be on providing as many opportunities as possible to catch up on friends and places.

If you might attend, register now. If you can't attend but would have liked to, still register now. Tell us your name, address and phone number, your rank and number, course number or position and any stories you would like to share.

We intend to offer all who register a booklet describing the station, the town, its pubs, dance halls, picture theatres and skating rink at a nominal price.

Register with John Ryan, ex RM, 103 Russell St, Maryborough QLD 4650, tel 071 213 342; Kevin Grimshaw, ex WAG, 78 Dale St, Maryborough QLD 4650, tel 071 221 441; or fax RAAF Reunion on 071 231 884.

Many thanks and best wishes to the amateur fraternity, amongst whom I have many friends.

John Ryan

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Spotlight on SWLing

*Robin L Harwood VK7RH**

It was recently revealed that the UK Government decided to slash funding of the BBC World Service. The Whitehall bureaucrats have been able to direct funding and nominate what language services are broadcast, but do not have any control over programming. It is too early to determine what technical and programming alterations will occur, but they are going to cause a serious rethink in the board rooms of the BBC external services.

One service, which has largely been responsible for the funding blow-out, is probably the BBC World Television Service. This has been operational for about three years now and has expanded, despite losing its relay over the Hong Kong-based "Star" satellite system. Apparently the Chinese took exception to several BBC stories and the worried commercial entrepreneurs didn't want to lose the lucrative Chinese market and ditched the "Beeb" TV. I believe that they have since relocated to a satellite over the Mid-East on "Arabsat".

In April, the single BBC World Service program in English was broken up into six or seven different streams, eg the Americas, Europe, Asia and Africa. It is

now common to hear alternative WS programming, which has made it easier to identify the various relay sites throughout the World. Australia seems to be on the Asian stream, judging by the medium wave relays of the BBC, yet I do find the European and American streams are more easily heard in the afternoon and early evenings.

Recently, ground-breaking ceremonies were held in Thailand for a new BBC relay site to service northern and eastern Asia. It will be jointly operated by the BBC and Radio Thailand. The present Hong Kong site will be unavailable after 30 June 1997, when the Crown Colony reverts to China. The Beijing authorities made it known some time ago that they were not going to allow the BBC World Service to continue operations from there.

I often tune in to Kol Israel in Jerusalem on 9435 kHz at 0400z, to hear the daily English news bulletin. I find that here is a more in-depth coverage of what is happening in that region. However, over the past months, I haven't been able to hear it because there is a Farsi program to Iran on the same channel.

Where is it coming from? Would you believe it is in Washington DC and from the "Voice of America". Possibly it is from the Kavala site in Greece or from the CIS, yet it demonstrates bad frequency planning and lack of co-ordination. Anyhow, Israel reverts to Standard Time at the beginning of this month and the 15 minute English bulletin will be at 0500 UTC. Farsi will stay at 0400 as Iran doesn't advance its clocks for summer.

Recently I was entertaining a friend from Connecticut USA, whom I met through the "Letterbox" program on the "World Service of the Christian Science Monitor". We both were featured in a Christmas Day special a couple of years back and kept in touch via e-mail. Since then the station has shortened its name to "Monitor Radio International" and the "Letterbox" program has been whittled back to a three minute spot at the conclusion of its hour long transmission.

The only shortwave "Letterbox" type program is "Saludos Amigos" on evangelical broadcaster Radio HCJB in Quito, Ecuador. It is on Sundays at around 1010 UTC. If you are wondering where the Pacific service of Radio HCJB has gone, it is now on 5900 kHz between 0700 and 1100 UTC. They had to move from 6135 as there is another South American regional station that was being drowned out by the 500 kW sender. 5900 kHz does not seem to be as loud as it was on 6135 kHz.

Notice that most of those Volmet stations on HF are now automated. The Sydney operation on 6676 and 11387 kHz at the zero and 30 minute marks uses a synthesised male voice, which is identical to that used by the US Coastguard for their HF Marine weather broadcasts on 8743 and 8764 kHz. The NZ Volmet on 6679 and 8828 kHz uses a synthesised female voice with a Kiwi accent.

In conclusion, I would like to thank David VK4PUP for sending an e-mail to inform me that the OZ_SW echo is still functioning. The problem seems to be local and I'm sure that it will be restored by now. Don't forget, if you have any news, you can reach me at the addresses given below.

*52 Connaught Crescent, West Launceston TAS 7250
VK7RH@VK7BBS LTN.TAS.AUS.OC
Internet: robroy@tamarcom.com.au
Fidonet : Robin.Harwood 3:670/301@fidonet.org*

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QSLs from the WIA Collection

Ken Matchett VK3TL* Honorary Curator WIA QSL Collection

3Z50PW

This QSL, 3Z fifty PW, was one of several that celebrated the 63 days of the Warsaw uprising fifty years ago. The dates were from 1 August 1944 to 2 October 1944, the prefix 3Z50 being used for this special occasion. The suffix PW is also of significance, the letters PW standing for Powstania Warszawskiego, or Warsaw Uprising.

This is said to have been the largest underground uprising against the Germans, an estimated 100,000 Poles having perished in the savage reprisals. *QSL donated by Jan SP5NE, through courtesy of Tad VK3UX.*

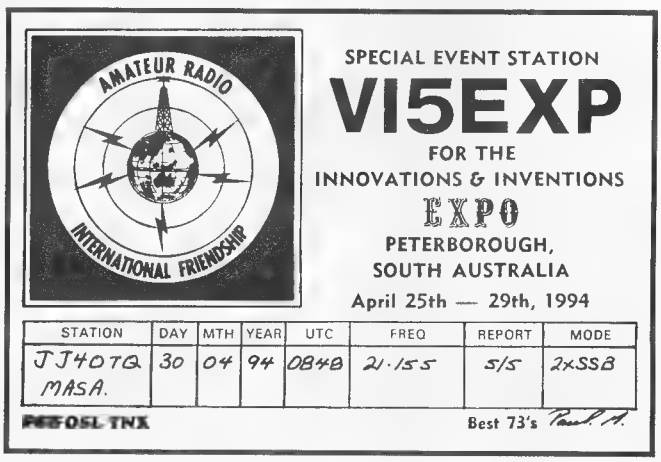
VI5EXP

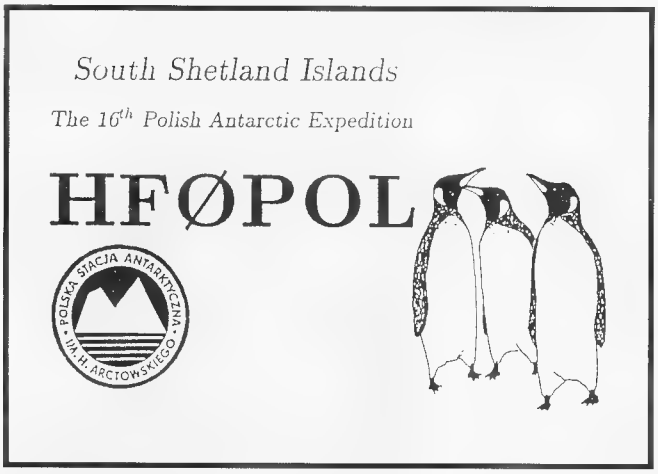
This special event station celebrated the Innovations and Inventions Exposition held in Peterborough, SA during April 1994. The station was operated by Paul VK5MAP on three bands, 10, 15 and 80 metres, as was the special station VI5XPO, operated by Peter VK5KD.

This was the first time such an exhibition had been held in the city and it attracted considerable interest. Many of the inventions and innovations shown (many of them used in farming) would seem to have a commercial future. Stations fortunate enough to have contacted any of the stations may still obtain their special QSL from Paul at PO Box 76, Peterborough by enclosing an SASE.

HF0POL

The QSL, HF zero POL, was sent to OT Austin Condon VK5WO of Laura, SA in September 1992 for a 40 metre 2 x SSB





QSO with the Polish Academy of Sciences' station in the South Shetlands.

This station was founded on King George Island in 1977, its staff of 19 carrying out research in biology, meteorology and geo-physics throughout the year. As well as the Polish station, other countries, such as Russia (eg 4K1F), Great Britain (eg VP8AK), Chile (eg CE9AH), Argentina (eg LU5ZI) and Uruguay (eg CX0XY), have used the amateur bands from the island group.

8J7YLH

There seems to be no limit to the number of other interests of amateur radio operators which are displayed on their QSL cards. A very wide range of sports from table tennis to mountain climbing can be seen on the QSLs which we receive. This QSL, 8J7YLH, served to mark the Third Women's World Hang-Gliding Championship held in 1993 in Nanyo, Japan.

The Japanese prefix 8J has been used extensively as a special event prefix mainly for expositions, sporting events of international significance, and ham conventions. The suffix of this particular callsign would seem to be most apt.

VK3NAY

The introduction of the NAOCP (Novice Amateur Operators Certificate of Proficiency) in 1976 opened up a world of communication for thousands of radio enthusiasts who did not qualify for full licence privileges. The full licence necessitated a pass at a Morse code proficiency level higher than that prescribed for the Novice licence. Callsigns were allocated from the block NAA-NZZ. Three letter callsigns beginning with N and V were the first to be issued followed by P, M and L. In 1980, the DoTC issued the three letter series starting with the letter K for holders of both the Novice and Limited licences.

The first Novice licence in Victoria was received on 20 August 1976 by Dick VK3NAY. Operations commenced on the same day from his station on two crystal-locked frequencies in the 80 m band, one of the three HF bands on which Novice licensees could operate. The antenna was a half-wave dipole and the transceiver was home-brew. The accompanying QSL was an acknowledgment of a SWL report from SK Eric Trebilcock BERS195 on the third transmission from the station one day after the issue of this first Novice licence in Victoria. *Card from the estate of the late Eric Trebilcock.*

YA0CDRC

The callsign, YA zero CDRC, is that of the Camel Drivers Radio Club of Afghanistan. It was sent to SK Len Wilson VK6LG for a QSO in September 1969. A suffix of four letters was, at that time, rather unusual although we were introduced to such an allocation when we all received QSL cards from UB5ARTEK back in the early 1960s and wondered what it was all about. There is provision on the reverse side of this YA card for indicating whether the QSO was mobile, portable or from a fixed station. This QSO was from a fixed location — a pity, really, since the collection lacks a QSL for camel-mobile operation!

Thanks

The WIA would like to thank the following for their kind contribution to the collection: Brian VK4LV, Steve VK2PS and Hans VK4/HE9RFF.

*4 Sunrise Hill, Montrose VIC 3765
Tel (03) 728 5350*

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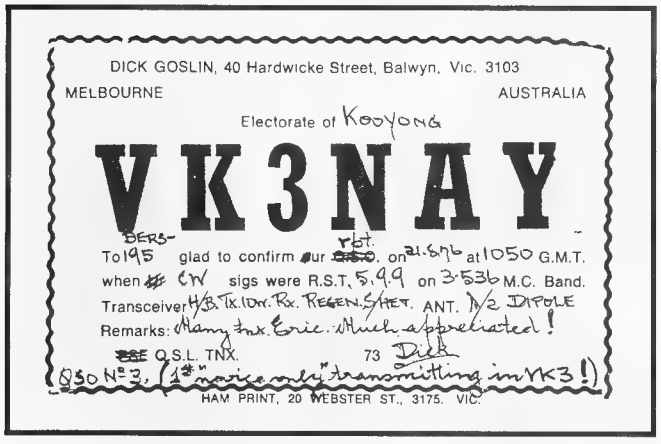
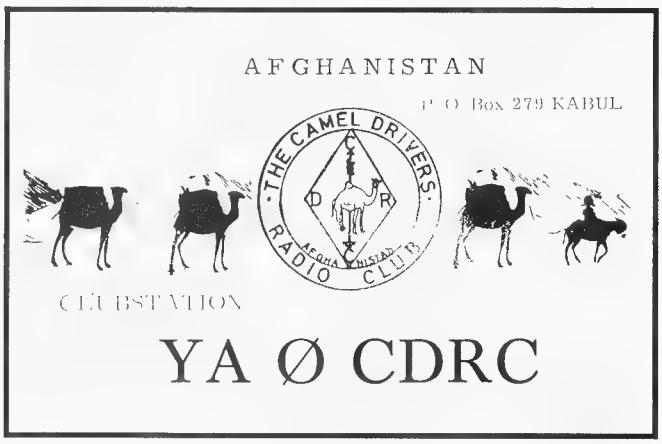

DICK GOSLIN, 40 Hardwicke Street, Balwyn, Vic. 3103
MELBOURNE
AUSTRALIA
Electorate of KOOYONG
VK3NAY
To BERS-195 glad to confirm our rpt. QSO. on 21.676 at 1050 G.M.T.
when CW sigs were R.S.T. 5.9.9 on 3.536 M.C. Band.
Transceiver H/B. TX. IOW. RX. REGEN. S/HET. ANT. 1/2 DIPOLE
Remarks: Many Thx Eric. Much appreciated!
QSL. TNX. 73 Dick
QSO No 3. (1st "voice only" transmitting in VK3!)
HAM PRINT, 20 WEBSTER ST., 3175. VIC.



Repeater Link

*Will McGhie VK6UU**

Low Cut

Last month's *Repeater Link* contained a circuit for notching out a particular CTCSS tone to prevent it being retransmitted through a repeater. This circuit attenuated a given CTCSS tone by more than 20 dB and allowed most other tones to pass. This would allow users to send other CTCSS tones through a repeater provided the repeater used direct frequency modulation of the transmitter.

However, as an alternative, most CTCSS tones, along with power supply hum, can be attenuated. The accompanying circuit does just that. The capacitors C1, C2, C3 and C4 determine the -3 dB point. Depending on how much attenuation you require, three combinations are shown.

With capacitors C1 to C4 having a value of 0.01 μF, the response is as shown in the drawing as A. With C1 and C2 being 0.01 μF, and C3 and C4 being 0.015 μF, the response is as shown as B. With all four capacitors having a value of 0.015 μF, the response is as shown as C.

If a higher amount of attenuation of the low frequencies is chosen, then the repeater's audio suffers to some degree. This may not be obvious if your repeater is using phase modulation due to its poor low frequency response. However, with direct frequency modulation it may come as a surprise how attenuation of frequencies below 300 Hz affects the quality of the retransmitted audio. The audio as transmitted from a user's transmitter already has the low frequencies attenuated on purpose, but reducing them even further results in thin sounding repeater audio.

With C1, C2, C3 and C4 all 0.01 μF, the -3 dB point is 320 Hz. With C1 and C2 at 0.01 μF and C3 and C4 at 0.015 μF, the -3 dB point is 250 Hz. With all capacitors at 0.015 μF the -3 dB point is 200 Hz. As you can see, not all CTCSS tones would be attenuated by a significant amount; the low tones by 20 dB or more but the higher ones by only a few dB.

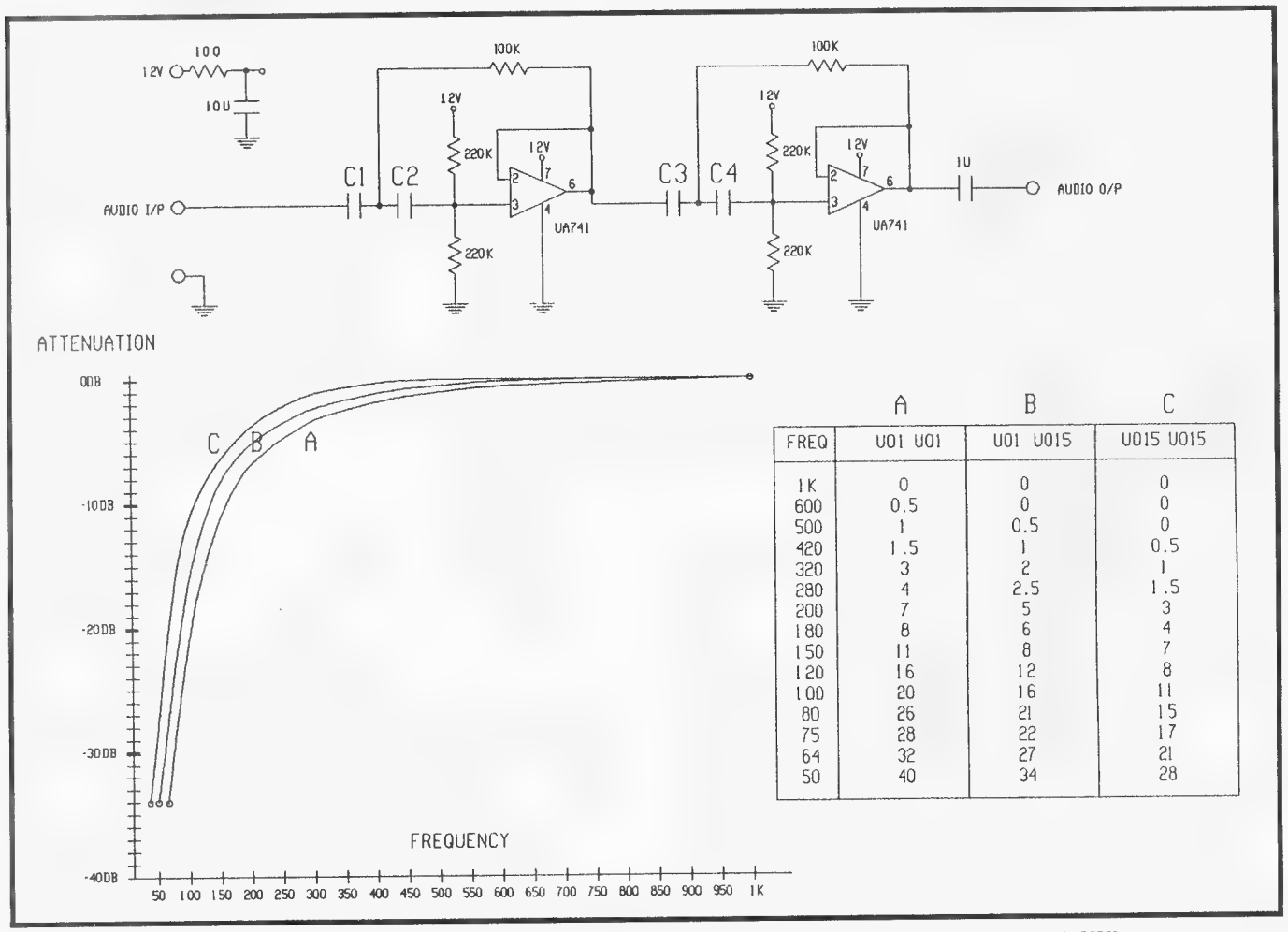
If a steeper cut is required, extra stages could be added. What is shown is a two pole filter. The ideal filter would offer 20 dB or more below 250 Hz with no attenuation above 250 Hz. The circuit offers room for building to your requirements. The gain is unity for frequencies above 400 Hz.

RPTR

In a letter from Peter VK1PK came an observation on information addressed on packet relating to repeaters. Several different bulletin addresses are used, such as *repeat, rptr* and *reptr.* It makes it hard to find this information due to this variation. As a start towards standardisation may I suggest *RPTR.*

New 29 MHz Repeater

I saw a message on packet that a 29 MHz repeater is on air in VK5. The user frequency is 29.620 MHz receive and



	A	B	C
FREQ	U01 U01	U01 U015	U015 U015
1K	0	0	0
600	0.5	0	0
500	1	0.5	0
420	1.5	1	0.5
320	3	2	1
280	4	2.5	1.5
200	7	5	3
180	8	6	4
150	11	8	7
120	16	12	8
100	20	16	11
80	26	21	15
75	28	22	17
64	32	27	21
50	40	34	28

Figure 1 — Circuit and frequency response of a low cut filter for FM repeaters *(drawing by Will VK6UU).*

29.520 MHz transmit. I look forward to working it.

HF FM

Also on packet I read a WIA news release from Roger VK2ZRH that FM is not allowed below 29 MHz by full call amateurs. My understanding is that narrow band FM is allowed on all HF bands.

Timer

Ever needed a clever timer that could switch on equipment at a remote repeater site; say, once a week for the WIA news broadcast? One of our remote solar repeater sites uses a receiver to link the WIA news onto the repeater from another repeater. It is only needed for two half hour periods every Sunday. The rest of the time it sits there doing nothing but using scarce solar power. I have found such a clever timer that is commercially available from your local hardware store, costs $50, draws 0.8 of a milliamp from 12 volts and can do all sorts of timing functions. This will be featured next month.

21 Waterloo Crescent, Lesmurdie 6076
VK6UU@VK6BBS

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WIA News

Changes at Federal WIA

The foreshadowed changes to the WIA Federal Articles of Association (see *WIA News*, July), were finally accepted and registered by the Australian Securities Commission (ASC) on 6 July.

The three new directors appointed to the Federal Executive were subsequently registered with the ASC. They are Lance Bickford VK4ZAZ, Rowland Bruce VK5OU, and Peter Naish VK2BPN. Federal President Neil Penfold VK6NE remains a director and is Chairman of Executive.

WIA Federal Secretary Lewis Badge tendered his resignation to the Federal Council at its July meeting. He leaves to pursue other interests, including an extended trip overseas.

The new Federal Executive appointed Peter Naish VK2BPN as temporary Federal Secretary until another appointment can be made.

VHF/UHF — An Expanding World

*Eric Jamieson VK5LP**

All times are UTC.

Transatlantic Contacts on Two Metres

Emil Pocock W3EP, in *The World Above 50 MHz* for August, is doing his best to stir into action suitably placed amateurs for a terrestrial contact between North America and Europe on 144 MHz. He cites the 4000 km distance from Hawaii to California as being similar to that across the Atlantic, which extends from 3500 to 5000 km.

However, the amateurs on the Hawaiian path are well organised at both ends and make good use of beacons as devices for warning of possible openings. Emil says that for the Atlantic crossing to succeed it will require similar dedicated effort and, with this in mind, W5IJU plans to operate six and two metres from CY9 from 27 July to 2 August.

Emil says, *There are at least two dozen beacons in the 70, 144 and 222 MHz bands on both sides of the Atlantic that could provide a starting point for probing sporadic-E and tropospheric ducting. These are the two modes most likely to produce transatlantic contacts on 144 MHz. There are dozens of two metre FM repeaters in most countries, and television stations also make excellent beacons, with their high power and strategic placement and VHF operation.*

We will await with interest, news of progress towards such contacts. At the same time, we in Australia should be concentrating more on achieving a path to South Africa. Contacts have been made on six metres via F2, but the total via that medium is rather small. As far as I am aware, no contacts have been made via Es and certainly none via two metres. The distances are greater than the Atlantic path, so, as I wrote previously, in the main it's up to the VK6s to become involved. But no one in the southern regions of Australia should overlook the path to South Africa, which appears to exist over Antarctica, in the light of reports of VK3OT having been heard there during contacts to VK0IX.

Emil also reports that Nestor LW5EJU in Argentina, had TEP propagation on April 2, 3, 4, 5, 10, 24, 25 and 27, mostly to Venezuela and Costa Rica, although on 10 April he made contact with CO3ZD and heard the W5VAS beacon. W5VAS worked four Argentinians but missed LW5EJU.

News from Europe

Ted Collins G4UPS reports the first opening to the UK occurred on 7 June with the first alert coming from the beacon W3VD on 28 MHz, then EH7KF was heard calling a VE1 station. VE1PZ was heard 5x5 working several G/GW stations. On 16/6 W3VD again and VO1ZA six metre beacon at 1853. Similar events on 19/6.

Ted also reports that, during June, three stations commenced operation from the Western Sahara Democratic Republic. 4U/KC0PA is Tim with the United Nations group, and the others are S0RASD and S07URE. Hungarian stations became active in June with HA6ZB worked and HA8BE heard. From Mauritania, Eric 5T5JC is using a new callsign 5T6E, while 5T5BN is located on the coast. RV6HF operates from Russia and YL2DX from Latvia. It seems that Europe can provide fresh contacts on a continuing basis.

Whilst these new stations may not be available to VK at present, it is always useful to know what new countries make six metres available, as has been the case in Hungary.

It also appears that more European operators have removed the wraps from their six metre equipment, realising there is life after F2 through the medium of sporadic-E. Ted Collins sent nine pages of contact details for June, with outstanding days on 2, 4, 5, 6, 7, 9, 10, 12, 19, 20 and 27. The band usually opens around 0630 (that's 6.30 am local), and often continues through to 2300, so there is much to keep operators amused!

A typical day was 12/6. Band opened at 0645 with OE activity and much in-band TV. Worked IK0FTA 5x9, 4N1SIX/b 579, YU1SIX/b 599, ZB2VHF/b 599, 9A/OK/SP activity. 0745 SV1NN 579, SV1SIX/b 599; 0753 SM7AED 579; 0758 G3CCH 579 good tropo, CT0WW/b 599, SM/YU/SP stations; 0845 OH0/DL5FF 579, OZ6VHF/b 569, S55ZRS/b 599; 0859 OZ/F1OIH 5x9; 0917 OH6MPC 5x9, heard SV1AB 5x7; 1008 LA3EDA 5x9; 1011 SV1EN 5x9; 1014 SV1OH 5x9; 1047 YO2IS 579; 1140 GM0ILB 5x9; 1200 GM7SVK 5x9; 1205 GS7UEG/p 5x9, GM0PKW 5x9; 1252 EH3FLN 5x9; 1303 EH2BGZ 5x9; 1340 propagation mostly to north east with SP/OK/OE/YU/S5/9A/OM; 1357 DL3HRM 5x9.

1401 OK1FAV; 1422 DL7ANR 5x9; 1441 OK1VQ 599; 1455 SV9SIX/b, LX0SIX/b both 599; 1459 LX1JX 5x9; 1510 ON4PS 5x9; 1514 PA3FYM 599; 1533 DL6FBJ 5x9; 1536 OK1NR 599; 1543 DJ3OS 5x9;

1622 SM7CMV 5x9; 1630 ES0SIX/b 579; 1647 LA1IC 5x9; 1705 ES2RW 5x9, OH1SIX/b 579; 1753 ES5MC 5x9, same activity through to 2003 OH0/DJ2PJ 599; 2004 SM5PRE 5x9; 2010 ES1CW 599;2043 LA9DM 5x9, plus SM/OH/OH0/OZ/ES/YL activity; 2114 LA8WF 5x9; 2119 LA3BO 5x9; 2147 LA8PV 599; 2202 LA6MP 599, still wide open to Scandinavia and strong in-band TV to 2230 when QRT.

I have provided the above day in detail to give VK stations an idea how the scene unfolds in the UK. Changes to antenna direction would be frequent, countries involved being 9A, DL, EH, ES0, G3, GM, IK0, LA, LX, OE, OH0, OK, OM, ON, OZ, PA, S5, SM, SP, SV, YL, YO and YU, a total of 23 for a day's work! In addition, beacons logged were 4N1SIX, YU1SIX, ZB2VHF, SV1SIX, SV9SIX, CT0WW, S55ZRS, LA0SIX, ES0SIX, and OH1SIX, a total of ten.

If you study the progression of contacts, it often appears that there is quite a time lapse between contacts, although it is possible Ted has not included every contact. Here in VK, under conditions of good Es, up to three contacts per minute are possible, especially during contests, and definitely during a two metre ES opening! On the other hand, we have no need to sort out countries except for periods when ZL, P29 and FK appear. When Ted reads this he may comment.

QSL Cards

Some cards do finally make an appearance. At the end of March 1989 news emanated that **Steve VK3OT** had worked BY4RB in China, on six metres. If I remember correctly, at the time there were comments from some people that it was a doubtful contact, so in deference to comment, the contact was not claimed.

Recently, quite "out-of-the-blue," Steve received a QSL confirming that contact on 30/3/89, complete with a hand-written message in Chinese symbols, on the rear. The QSL is printed in three colours on thin white card, and is reproduced in these columns for those who wish to peruse it. At last, any doubts about the contact have been cleared.

Also, from time to time I receive cards from overseas countries claiming a contact with me on the HF bands. The most recent is from SP9EMV in Poland, for a 14 MHz CW contact on 30/3/94. My signal report was 599. I am flattered to think that with my "sloper" antenna, I can land a 599 HF signal into Europe. If my signal was that strong then the callsign should not have been mis-read! Obviously, someone out there knows I am glued to the VHF bands, so feels free to use my callsign with little chance of detection. Good luck to the person, but I shall return the card to the sender, stating the reason for no card from me.

Somewhere amongst hundreds of QSLs, I have a card from a Canadian station for a two metre contact I was supposed to have made with him. I know my signal can cover considerable distances at times, but to Canada on two metres must have placed a deal of strain on the antenna! It's a bit like trying to fire too far with a gun, you may stretch the barrel!

Two Metres to Japan

I recently had an interesting telephone conversation with **Rex VK8RH** in Darwin. This confirmed a query I had in regard to whether Darwin amateurs were still contacting Japan on two metres. He replied that they were indeed and such contacts were commonplace.

Signals still closely follow the original north/south path with limited spread at each end. JA6 is the more common area of contact with FM signals around 5x4 and TEP flutter. It is quite easy to work the JAs with 10 watts to a 1/4 wave antenna and Rex has completed around 200 contacts. The JAs usually appear during August/September and again in February, but may be worked at other times. Usually heard between 1100 and 1200, but may commence around 1000.

Rex said it is interesting to note that when JAs were available, he tried to contact Louis KG6UH/HL9 in Korea. But he was unsuccessful, despite the high power and large array used by Louis, so it is still a matter of the narrow angle of propagation being the criteria for a contact. It is not known how far south the signals travel, as there are no operators at Katherine. Contacts are usually around 6000 km.

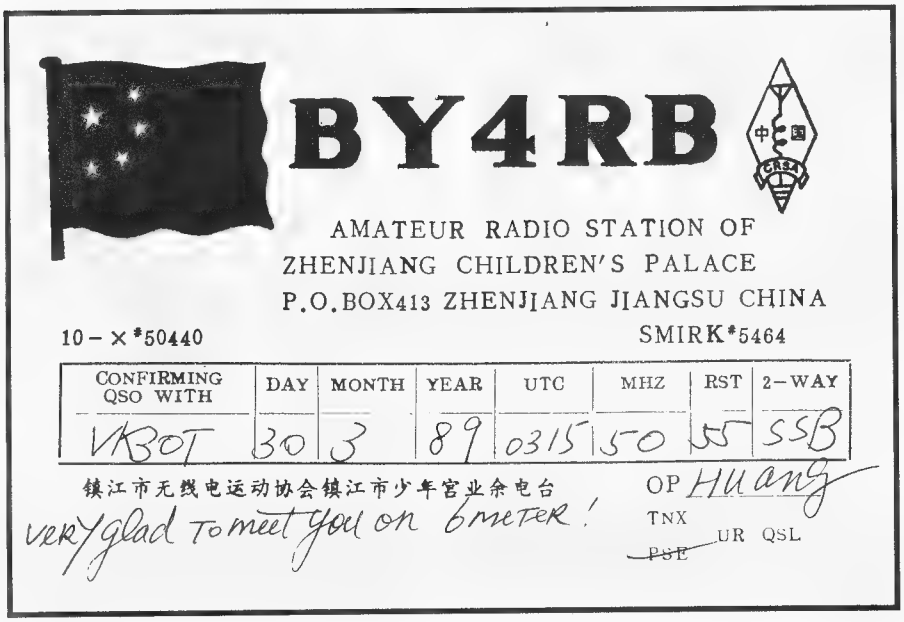
More on Two Metres

Following the big opening during June (reported last month), another smaller opening occurred on 5 July, when I again worked to central NSW. Mark VK2EMA was worked on 144 and 432 and Fred VK2YZU on 144, all between 0030 and 0104. Signals here were more marginal at around 5x2 on both bands. Roger VK5NY fared somewhat better, working the above two stations, also Peter VK2BIT near Wollongong and Mike VK2FLR in Sydney. This was late at night after 1300. VK2BIT also worked Barry VK5KCX at Gawler around 1100.

Mike VK2FLR sent a BBS message to me which confirmed most of the above, but indicated he too had worked VK5KCX at 1115 exchanging 5x1 and 5x3 reports. Mike said, *Around 1145 I had a brief word with VK1BG and we both noted that the path between Sydney and Canberra seemed no better than normal.*

We then waited around for Roger VK5NY to get home and come on, which he did after 1300. Roger was an easy contact to VK2BIT but somewhat more difficult into Sydney. As in the June opening, my CW was generally audible at VK5NY and we duly exchanged 5x1 and 5x2 on 144.200 MHz just after midnight (why is it that no-one uses CW in VK5?). Col VK5RO was listening to the activity on 144 MHz and on the 3695 kHz liaison frequency and reported he was hearing meteor pings from me but no consistent propagation. At no time was the VK5VF beacon audible in Sydney.

This was the second tropo opening into the Adelaide region in four weeks, associated with a very strong inland high



pressure system. While we normally expect good inland tropo during autumn, it is very unusual to see it persist so late into winter. I guess the other factor is the presence of a couple of well equipped 144 MHz and 432 MHz stations in western NSW.

VK5 Beacon Information

A BBS message from David VK5KK says that, *After much negotiating at the Mt Gambier Convention, the beacon officer VK5AVQ and his side kick VK5KK, have set about improving the Mt Lofty beacons for the summer season. The first visit to Mt Lofty was made on 2/7/94 where the following points were noted: 6 m beacon, fully operational with intact antenna; 2 m beacon, fully operational with intact antenna; 70 cm beacon, fully RF operational but antenna in need of repair; 23 cm beacon, not in service, antenna intact and operational.*

The 70 cm beacon has been removed and is in VK5KK's shack to investigate its operation, with the only apparent problem due to the damaged antenna ... high SWR. Power output is OK at four watts. The computer controller for power levels (60 mW/250 mW and one watt) is not functioning correctly from the off-air receiver. This will be looked at in the next few months.

What is Going Back Up?

At this stage it is 90% certain that the CW Morse practice beacon will now be located at the beacon site. Current frequency is 144.975 MHz, but this is likely to change to 145.650 MHz, according to licensing requirements. Operation will be approximately 10 watts FM to a half wave vertical.

After two seasons off air, the 23 cm beacon will be reinstated. The specs are the same as before, 1296.450 MHz, EIRP is 10 watts average to a bi-directional antenna. Keying is to be controlled by the 70 cm beacon.

The 13 cm beacon will be returned, the frequency 2403.450 MHz, subject to SMA approval ... licence application for the new frequency has been in for six months. The beacon will run two watts RF to a bi-directional antenna pointing towards VK6 and the South East. To be keyed by the 70 cm beacon.

The beacon for 3 cm will be ready this season and run one watt into a slotted waveguide omni-directional antenna. EIRP TBA. Frequency 10368.450 MHz.

Schedule

The 70 cm beacon should be back at the end of August, followed by the 23 cm/13 cm beacons September/October. It is envisaged that the CW beacon will be moved in about three months.

The 3 cm beacon is a separate item. Its development is a result of the kind donations of equipment from Des VK5ZO (waveguide antenna), Roger VK5NY (one watt PA) and David VK5KK (10 GHz driver, stabilised oscillator and digital works). It is intended that the beacon will be of primary use to 10 GHz operators in VK3/VK5 region to the South East. If it is heard in VK6, that's a new world record anyway ... but mind you, VK5KK is now 0.5 km further east than Mt Lofty!

Its antenna is to be omnidirectional. However, if sufficient interest is shown, this can be upgraded to a horn feed with around 15-17 dB gain and pointed towards VK3 or VK6. I would like to encourage all those interested in using the beacon to register interest via your column, or by people contacting me via my answering service (24 hour pager) on 08 239 8804.

At this stage, plans for a 3.4 GHz and 5.7 GHz beacon have been halted, as there seems little interest in these frequencies with the current advances on 10 GHz. The WIA may not renew the 5.7 GHz frequency until further notice. The 3.4 GHz frequency will be kept as part of this beacon; the crystal and oscillator have been built.

Should any of your readers have any interest in these frequencies, we may open the books for these next season ... If anybody would like a contact on 3.4 GHz SSB this season, please contact me!

Thanks, David, for your information. All are now informed of the 1995 state of the beacons in South Australia, which seem to be the most sought-after beacons in Australia. Mount Lofty will be positively bristling with antennas!

While dealing with beacons, a report in the *West Australian VHF Group Newsletter* says that the Beacon Committee is arranging to move the beacons to a new site at the 22 m level on one of the Channel 9 masts. More details later.

ARRL HQ Message

Via a fax from **Ron VK3AFW** comes the following Special Bulletin issued by ARRL HQ to all radio amateurs:

Extraordinary conditions for tropospheric propagation in the US Midwest have resulted in a new overland record on the amateur 3456 MHz band.

At 1224 UTC on 12 July, Al Ward WB5LUA, in Allen, Texas, worked Gary Morhlant WA0BWE, in Maplewood, Minnesota, a distance of 841 miles. The previous record of 736 miles was set on 1 May 1992, between WB5LUA and W9ZIH, in Malta, Illinois.

As is often the case, this record-breaking activity began lower in frequency, with an initial contact between WB5LUA and WA0BWE on 432 MHz, with signals 5x9 both ways, according to Ward. An equipment problem forced them to skip 1296 MHz, where the overland record is 1287 miles.

Next came 2304 MHz, and the first Texas-Minnesota 2304 MHz QSO, where

QSP News

EMDRC Balloon Launch

The Eastern and Mountain Districts Radio Club will conduct a helium filled balloon launch on Saturday, 16 September 1995 from the Vermont South Shopping Centre, Burwood Highway, Vermont South at 10.00 am.

The balloon will carry with it a maze of electronic wizardry designed by Brian VK3YNG which will measure time, temperature, altitude, radiation levels and hopefully send global positioning system information. The information will be transmitted in standard packet format and voice on the 2 metre band at a power level of about one watt. The device does not include a receiver and amateurs are advised that it will not be possible to connect to the device.

The nearby Vermont South Community Centre will be used as the operations centre with nets to be run on 80, 40 and 20 metres.

The balloon is (subject to the prevailing winds) expected to land in the Victorian Alps where it will be located by the expert skills of our Melbourne fox hunters.

A special QSL card will be available for stations who log data from the device, together with the time, signal strength, receiving antenna direction (if applicable) and a cheque or money order to the value of $5.00. Further information will be provided on the WIA VK3 Division broadcast and the EMDRC club net on 3.585 MHz at 2000 hrs local on Wednesdays, 29.240 MHz FM at 2030 hrs local on Wednesdays, or 28.340 MHz at 0900 hrs local on Sundays. Alternatively, direct requests for further information to Chris VK3KCP on (03) 629 2653

the record is 940 miles. Contact was then easily established on 3456 MHz. WA0BWE was running about five watts, WB5LUA running 100 watts to a five foot dish at 65 feet.

On 13 July, excellent tropospheric propagation continued in the midwest, with perhaps more distance records to come as a result. Thanks to WB5LUA for prompt reporting of these developments. Thanks Ron.

Jersey Island

Geoff GJ4ICD sent an e-mail message to me via Dave VK2KFU, outlining the high degree of Es activity around Europe and across the Atlantic to North America. The Europeans are now witnessing what we have known and enjoyed for years, that during the low part of the solar cycle considerable improvement to Es propagation occurs. However, I still wonder if they are so concerned with myriads of contacts on 50 MHz, that they are ignoring Es on 144 MHz and the thrills that can provide. If it occurs in Australia it must occur in Europe; Emil W3EP frequently reports two metre Es contacts in his *QST* columns, but no reports emanate from Europe.

On 1/7 50 MHz was well open in Europe. GJ to SV, 5B4, OD5, CT3, EA9, EA6, I, EA, C31, T9, 9A. 2/7: GJ4ICD to UX0FT, LZ2FT, UT6X, 9H, 5B4CY, OD5, OZ, SP, OK, OM, EH6, EH9, S5, 9A, SM. Also big JA opening to Seattle area. Jim W7FI reported working 120 JAs in all districts. 3/7: UK to W opening. 4/7: Band open all over Europe during morning, 2000 VO1ZA S3/4, WA1AYS 589, VE1YX, VE1ZZ. 5/7: GJ4ICD 1000 to ZB, EA, CT; 1350 S0RASD; 1350 FY7/b until 1640; CT3FT on FM on 50.100!

6/7: GJ4ICD to KP4EIT/S9, N1GDP, W3EP, VE1YX, WA1AYS, WA1OUB, W1JRA, K1JRW, KM1H, WA1RVI, VY2KX, EH8BPX. 7/7: Band open again from GJ to VE1YX, VE2, VE3 and W1, W2, W3, W4 and W8; OX3LX for new country, number 151; Geoff said he had never heard so many stations from USA even during F2 period, most signals S9 plus. 8/7: GJ4 to W1, W3 and VO1/b.

I hope VK this summer will follow the excellent conditions of the northern hemisphere. If so, there will be Australia-wide coverage, also ZL, P29 and at least FK. But two metres Es will not be neglected!

Closure

Originally, I thought there would be little to report, but last minute info arrived to swell the copy, so I hope the Editor will not look too closely!

Closing with two thoughts for the month,

Children are not things to be moulded, but are people to be unfolded, and

In eating corn on the cob or watermelon, you have a choice — you can be fastidious, or you can enjoy it.

73 from The Voice by the Lake.

**PO Box 169, Meningie SA 5264*
Fax: (085) 751 043
Packet: VK5LP@VK5WI.#ADL.#SA.AUS.OC

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WIA News

Demise of 70 cm Greatly Exaggerated

To paraphrase a famous quote, the demise of 70 cm — or at least part of it — has been greatly exaggerated. Rumours circulating within the amateur community in July and August variously had it that amateur operations in a 3 MHz segment of the 70 cm band, between 440-443 MHz, were now forbidden and/or the segment had been "sold".

The rumours have no foundation.

They arose following a request from the Spectrum Management Agency to the Queensland Digital Group to avoid interference from a packet radio link system to a radar system operating from a barge in the Port of Brisbane. As amateur radio is a secondary service on the 420-450 MHz band, and "radiolocation" (ie radar) is the allocated primary service (under the Australian Radiofrequency Spectrum Plan), amateurs are obliged to avoid or rectify any "harmful" interference to primary users and to accept any harmful interference from them.

The Queensland problem was resolved by the installation of beam antennas for the link system in question and a reduction in power levels used, and co-existence of the primary and secondary users continues.

Amateur radio has been a secondary service on the 70 cm band since it was made available to us in the early 1960s, when we lost the 288-296 MHz band to broadcasting. Repeater systems in the NSW Illawarra and Jervis Bay coastal regions, south of Sydney, suffered some interference in recent years from defence force Syledis radar systems. Other examples have been reported in other regions around Australia.

However, Federal Technical Advisory Committee Chairman, John Martin VK3KWA, advises that these 70 cm radar systems are on the increase. As they operate on 441 MHz, +/– 2 MHz, they affect amateur links in our band plan link segment of 440-443 MHz in the general region where they are established. The matter has been referred to the WIA's SMA Liaison Team for discussion with the relevant Spectrum Management Agency section.

Silent Keys

Due to space demands obituaries should be no longer than 200 words.

The WIA regrets to announce the recent passing of:-

M (Mark)	WESTON	VK2CM
W L	TREVENA	VK3DTP
C (Cec)	DODDRIDGE	VK5CD

Robert Keith Dodd VK2RE

Keith died suddenly at home on 15 June, aged 67 years. He lived all his life at Tumut and, leaving school in 1942, started work with local garages as an apprentice and then as a motor mechanic. He was in the motor trade for 14 years, the last eight as workshop foreman.

Radio was a schoolboys' hobby and he built his own receivers from disposals gear. He also assisted his friend and fellow amateur Ross VK2PN in servicing receivers.

In 1954 he gained his LAOCP (one of the first in NSW) with call VK2ZAA. In 1958 he joined the Forestry Commission. In 1959 he was appointed radio technician, then Senior radio technician, a position he held until his retirement in 1988.

Keith was a foundation member of the Tumut ARC and, through his enthusiasm and expertise, our VHF repeater VK2RTD was established. In 1985 he upgraded to AOCP and callsign VK2RE.

Keith had experimented with all facets of amateur radio and was an inspiration to us all. Always ready to guide others, with advice and practical help, he was a worthy ambassador for our hobby. He is survived by his wife Jean, sons Rickie and Terry, daughter Keryl, son-in-law Bruce, grandson Philip and sister Lorna.

Vince Nugent VK2ALZ
Hon Secretary Tumut ARC

J L (Len) Grey AFC VK2AKO

Len, who was born in Scotland, came with his family to Australia as a young lad and grew up in Brisbane. Always keen on flying, at 17 he was a pilot and, at 21, joined QANTAS, flying in DH86 aircraft, mostly to Singapore.

He remained with the company until his retirement, finishing on Lockheed Electras. His flying time exceeded 24,000 hours.

During World War II Len was seconded to the RAAF because of his experience with flying boats. He was awarded the AFC for flying a Catalina to beaches south of Rabaul which, at the time, was in enemy hands, on one occasion taking 50 men to safety.

Later, Len rejoined QANTAS for a secret assignment to set-up an air link between Western Australia and Ceylon. Using Catalinas fitted with extra tanks, these flights took 30 hours or more, observing radio silence and flying at low altitudes. These flights were never detected by the enemy.

Len is survived by his daughter Caroline, her husband John, and granddaughter Nicole, to whom we extend our sincere condolences.

G W (Bill) Dukes VK2WD
BT

Technical Correspondence

All technical correspondence from members will be considered for publication, but should be less than 300 words.

TV Twin Lead

In recent times 300 ohm TV twin lead has been specified for use in matching sections and antennae. However, users should be warned that this lead only works for the purpose in fair weather.

When a film of water covers the web between the two conductors, the nominal impedance nose-dives as the capacitive reactance increases dramatically with the "K" factor of the water now forming a large part of the dielectric. This factor is about 80 (para 3.3 — ARRL Antenna Handbook). When compared to the "K" factor for polythene (2.3) which forms the web itself, it does not require much water in the field between the two conductors to cause vast changes.

As a rough test, the 16 pF or so of a one metre length of twin lead rises to 60 pF when only half immersed in a bucket of water.

In the *Technical Abstract* item on the "J-Pole" antenna on page 14 of January 1995 *Amateur Radio,* it does mention that it could be slipped into a plastic pipe radome, but does not specify why. This appears to be a simple solution to keep the twin lead dry.

Slotted web twin lead still has about half the web which gives a large change when wet. So, the only variety of twin lead for non critical outdoor use appears to be the "Super Low Loss Foam Enclosed"* variety which excludes water from the immediate field between the conductors, though fringing could still have some effect. However, measurements cannot be directly transposed as the velocity constant is about 0.77 compared to 0.82 for the common webbed variety.

For similar reasons, antenna loading coils and traps should be enclosed to keep them dry. Alternatively, they should be self supporting with spaced turns separated by insulating supports to prevent moisture bridging between turns. Capacitors can be short open stubs of co-axial cable with sealed ends. For example, RG58 co-axial cable has a capacity of some 100 pF per metre.

These effects are not new as many will remember those extra "ghosts" on the black and white TV picture on wet evenings. Fifty years back, the early US radars, using four-wire 300 ohm feeders, had lots of false responses from dew covered doughnut insulators. The use of correctly matched coaxial lines has eliminated many of these types of problems.

* *Super Low Loss Foam Enclosed TV Foam Twin Lead — Archer Brand. Tandy Catalogue No. 15-1174*

Bill McLeod VK3MI
42 Capon St
Chadstone VIC 3148
BT

HOW TO JOIN THE WIA

Fill out the following form and send to:

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Wireless Institute of Australia
PO Box 2175
Caulfield Junction, Vic 3161

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HF PREDICTIONS

Evan Jarman VK3ANI

The Tables Explained

The tables provide estimates of signal strength for each hour of the UTC day for five of the bands between 7 and 28 MHz. The UTC hour is the first column; the second column lists the predicted MUF (maximum useable frequency); the third column the signal strength in dB relative to 1 μV (dBU) at the MUF; the fourth column lists the "frequency of optimum travail" (FOT), or the optimum working frequency as it is more generally known.

The signal strengths are all shown in dB relative to a reference of 1 μV in 50 ohms at the receiver antenna input. The table below relates these figures to the amateur S-point "standard" where S9 is 50 μV at the receiver's input and the S-meter scale is 6 dB per S-point.

μV in 50 ohms	S-points	dB(μV)
50.00	S9	34
25.00	S8	28
12.50	S7	22
6.25	S6	16
3.12	S5	10
1.56	S4	4
0.78	S3	-2
0.39	S2	-8
0.20	S1	-14

The tables are generated by the GRAPH-DX program from FT Promotions, assuming 100 W transmitter power output, modest beam antennas (eg three element Yagi or cubical quad) and a short-term forecast of the sunspot number. Actual solar and geomagnetic activity will affect results observed.

The three regions cover stations within the following areas:

VK EAST The major part of NSW and Queensland.

VK SOUTH Southern-NSW, VK3, VK5 and VK7.

VK WEST The south-west of Western Australia.

Likewise, the overseas terminals cover substantial regions (eg "Europe" covers most of Western Europe and the UK).

nr

VK SOUTH — SOUTH PACIFIC

UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9
1	16.0	15	13.3	0	18	8	-3	-21
2	16.4	15	13.9	1	19	10	-1	-18
3	16.4	15	13.8	4	20	10	-1	-18
4	16.5	16	13.7	9	22	11	0	-18
5	16.2	18	13.3	17	23	11	-1	-20
6	15.0	21	12.2	32	23	8	-8	-30
7	13.5	24	10.7	42	21	1	-19	...
8	11.9	26	9.5	43	14	-10	-34	...
9	10.4	29	8.3	43	5	-26	...	...
10	9.3	30	7.4	42	-4	...	...	...
11	8.6	31	6.8	40	-13	...	...	..
12	8.1	32	6.4	38	-19	...	...	...
13	7.7	32	6.1	36	-25	...	...	...
14	7.5	33	6.0	36	-27	...	...	...
15	7.6	33	5.9	36	-26	...	...	...
16	6.7	35	5.2	32	..	...	...	...
17	6.8	34	5.2	32	-39	...	...	...
18	6.7	34	5.1	31	...	...	...	...
19	7.2	28	5.4	28	-32	...	...	...
20	8.8	20	6.6	22	-10	...	...	...
21	11.4	17	8.7	15	7	-15	-37	...
22	13.6	16	10.6	8	14	-1	-17	...
23	14.9	15	11.9	4	17	4	-9	-29
24	15.7	15	12.8	1	18	7	-4	-23

VK WEST — SOUTH PACIFIC

UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9
1	19.2	11	15.6	-27	16	13	7	-3
2	19.5	11	16.1	-28	16	14	8	-2
3	20.0	11	15.0	-26	17	15	9	-1
4	20.0	12	16.8	-21	18	16	9	0
5	20.1	13	16.6	-12	21	17	10	0
6	19.7	15	15.8	4	25	19	11	0
7	17.7	18	14.1	20	27	17	7	-7
8	15.9	21	12.6	34	27	13	0	-18
9	14 0	24	11.1	40	24	7	-9	-32
10	12 1	27	9.6	42	18	-3	-24	...
11	10 8	29	8.6	43	12	-13	-37	...
12	10.2	31	8.1	43	9	-18	...	...
13	9 7	31	7.6	42	5	-24	...	...
14	9 2	32	7.3	41	2	-30	...	...
15	9.1	32	7.2	41	0	-32	...	...
16	9.1	32	7.1	41	2	-30	...	...
17	8.0	34	6.2	38	-7	...	...	...
18	8.2	33	6.3	38	-7	...	...	...
19	8.1	30	6.2	34	-8	...	...	...
20	8.7	22	6.6	22	-3	-33	...	...
21	10.7	17	8.4	13	7	-13	-34	..
22	14.0	15	10.7	0	14	3	-10	-29
23	16.7	13	13.0	-14	16	10	1	-13
24	18.2	12	14.5	-22	16	12	5	-7

VK EAST AFRICA

UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9
1	9.1	8	7.0	-2	0	-19	-39	...
2	7.7	-4	6.0	-10	-5	-26	..	..
3	8.1	-8	6.2	-18	-4	-21	.	..
4	11.3	0	8.6	-36	2	-5	-17	-35
5	16.1	5	12.4	...	4	4	-1	-12
6	17.5	5	12.9	...	4	5	0	-9
7	17.7	6	13.2	...	4	5	1	-8
8	16.3	5	13.0	...	5	4	-2	-13
9	14.4	6	11.4	...	6	1	-7	-21
10	12.6	6	10.0	-26	5	-2	-14	-32
11	10.9	6	8.6	-14	4	-9	-25	..
12	9.7	8	7.6	-3	1	-17	-37	...
13	9.0	13	7.1	8	-1	-24	...	...
14	8.6	19	6.8	19	-3	-31	...	..
15	8.4	25	6.6	27	-5	-36	..	..
16	8.5	27	6.4	32	-4	-36	...	...
17	8.5	29	5.9	34	-4	-37	..	..
18	8.0	30	5.6	34	-9	..	..	..
19	7.6	31	5.4	33	-13	..	..	..
20	8.0	30	5.5	34	-9	.	..	..
21	7.9	30	5.5	34	-10	.	..	.
22	7.6	25	5.4	26	-12	..	.	.
23	7.4	16	5.2	15	-13	..	...	.
24	8.0	10	5.8	7	-7	-35	...	...

K SOUTH — AFRICA

UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9
1	8.2	12	6.3	9	-4	-30	...	...
2	8.7	7	6.6	0	-2	-23	...	...
3	11.8	10	9.3	-11	7	-4	-18	-38
4	16.6	10	12.5	-28	12	8	1	-10
5	18.1	8	13.4	...	9	8	3	-6
6	18 7	8	13.9	...	8	8	4	-4
7	18.9	8	13.6	...	8	8	4	-4
8	18.2	8	13.0	...	8	8	3	-6
9	16.9	8	12.0	-38	9	7	0	-11
10	15.2	9	10.7	-26	10	4	-4	-18
11	13.2	10	9.2	-14	9	0	-13	-31
12	11.5	11	8.0	-4	6	-8	-24	...
13	9.9	13	6.9	7	2	-18	-39	...
14	9.1	18	6.3	18	-1	-28	...	...
15	8.6	24	5.9	27	-5	-36	...	...
16	8.2	27	5.6	30	-8	...	...	...
17	8.2	29	5.7	33	-9	...	...	...
18	8.1	30	5.7	34	-10	...	...	...
19	7.9	30	5.6	34	-12	...	...	...
20	7.8	30	5.6	33	-13	...	...	..
21	8.4	30	5.9	35	-6	...	...	...
22	8.1	30	5.7	34	-9	...	...	...
23	7.9	24	5.6	25	-10	...	...	...
24	8.6	18	6.2	17	-4	-32	...	...

VK WEST — AFRICA

UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9
1	7.8	20	6.0	20	-8	-39	...	...
2	8.2	12	6.3	9	-5	-31	...	..
3	11.6	12	9.1	-3	8	-5	-21	...
4	16.4	11	12.8	-21	13	8	0	-14
5	17.9	9	14.0	-37	11	9	3	-8
6	18.7	8	15.3	...	10	9	4	-5
7	18.8	8	15.6	...	9	9	4	-5
8	18.5	8	15.2	...	9	8	3	-6
9	17.9	8	14.4	...	9	8	2	-8
10	16.4	8	13.1	-35	10	6	-1	-14
11	14.5	10	12.3	-20	10	2	-8	-24
12	12.7	12	10.1	-5	10	-3	-17	-38
13	11.0	15	8.7	8	6	-12	-31	...
14	9.7	20	7.7	21	2	-23	...	...
15	9.1	25	7.2	30	-1	-31	...	...
16	8.6	28	6.8	33	-4	-38	...	...
17	8.4	30	6.7	35	-6	..	...	...
18	8.6	31	6.7	37	-5	...	...	...
19	8.5	31	6.6	37	-5	...	...	...
20	8.1	31	6.2	36	-10	...	...	...
21	7.6	32	5.8	34	-15	...	...	...
22	8.2	31	6.2	36	-8	...	...	...
23	8.5	31	6.5	37	-5	...	...	...
24	7.8	27	6.0	30	-12	...	...	..

VK EAST — ASIA

UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9
1	22.9	13	18.9	-36	18	19	16	9
2	23.6	13	18.1	...	17	19	16	10
3	23.8	13	19.0	...	17	19	17	10
4	23.9	13	19.7	...	18	20	17	11
5	23 7	13	19.4	-34	19	20	17	11
6	22.8	14	18.5	-25	21	21	17	9
7	21.3	15	17.2	-11	23	21	15	5
8	19.7	17	16.6	13	28	21	13	0
9	18.1	20	14.5	35	31	20	9	-6
10	16.3	21	13.0	40	28	14	0	-18
11	15.0	22	12.0	44	26	9	-7	-29
12	14.2	23	11.3	46	23	4	-14	-39
13	13.0	25	10.3	47	19	-3	-24	...
14	11.9	25	9.5	45	13	-13	-37	..
15	11.3	26	8.9	44	9	-19	..	..
16	10.9	26	8.5	43	6	-24	...	...
17	9.8	27	7.6	40	-4	-39	...	...
18	8.2	28	6.4	35	-23	...	.	...
19	8.6	28	6.6	37	-18	..	.	..
20	9.0	28	7.0	38	-12	...	.	..
21	14.0	21	10.8	33	21	3	-13	-37
22	20.7	16	16.3	2	26	21	14	4
23	22.1	14	17.7	-16	23	21	16	7
24	22.4	13	18.2	-28	20	20	16	8

VK SOUTH — ASIA

UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9
1	17.5	10	14.3	-37	12	9	3	-8
2	17.7	10	14.7	...	11	9	3	-7
3	18.3	10	15.5	...	11	10	5	-5
4	18.3	10	15 3	...	11	10	5	-5
5	18.3	11	15.1	...	12	11	5	-5
6	18.0	11	14.7	-32	14	11	5	-6
7	17.4	13	14.1	-19	16	11	3	-9
8	15.9	15	12.7	-1	18	9	-2	-18
9	14.1	21	11.2	34	21	3	-13	-37
10	12.5	22	9.9	38	14	-8	-30	...
11	10.9	24	8.6	39	4	-26	...	...
12	9.7	25	7.7	38	-6	...	...	...
13	9.2	25	7.3	37	-13	...	...	...
14	8.7	26	6.9	35	-19	...	...	...
15	8.5	26	6.7	34	-23	...	...	...
16	8.6	26	6.8	34	-21	...	...	...
17	8.5	26	6.7	34	-22	...	...	...
18	7.9	26	6.1	31	-32	...	...	...
19	7.2	26	5.6	27	...	...	...	...
20	7.7	26	5.9	30	-37	...	...	...
21	9.7	25	7.4	38	-7	...	...	...
22	13.0	13	10.0	4	10	-5	-22	...
23	15.5	12	12.1	-15	13	5	-5	-21
24	16.8	11	13.4	-28	13	8	0	-12

VK WEST — ASIA

UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9
1	20.8	13	16.7	-25	19	18	13	4
2	21.3	13	17.3	-33	18	17	13	5
3	21.7	13	18.0	-38	17	17	14	6
4	22.4	13	17.2	-39	17	18	15	8
5	22.5	13	18.8	-38	18	19	15	8
6	22.6	14	18.7	-33	19	20	16	9
7	22.3	14	18.3	-24	21	20	16	8
8	21.4	15	17.4	-12	24	21	16	6
9	19.9	17	16.0	7	27	21	13	1
10	18.2	19	15.3	30	30	20	9	-6
11	16.6	20	13.2	37	28	15	1	-17
12	14.8	21	11.8	41	24	6	-10	-33
13	13.5	22	10.8	43	19	-1	-22	...
14	12.7	24	10.1	46	16	-8	-31...	
15	11.8	24	9.3	44	10	-17	...	...
16	10.9	24	8.7	42	3	-28	...	...
17	10.6	25	8.3	42	0	-33	...	...
18	10.3	25	8.0	41	-2	-37	...	...
19	9.3	25	7.3	38	-13	. .	...	...
20	8.0	26	6.2	32	-33	...	...	...
21	8.5	26	6.5	34	-26	...	...	...
22	11.6	22	9.2	37	8	-19	...	...
23	16.2	15	12.6	5	20	9	-2	-19
24	19.4	14	15.3	-12	21	17	10	-1

VK EAST — EUROPE

UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9
1	8.5	-7	6.2	-21	-1	-17	-34	...
2	8.1	-13	6.0	-27	-1	-15	-31	...
3	9.1	-12	6.8	-38	0	-9	-23	...
4	11.3	-7	7.9	...	0	-4	-12	-27
5	13.9	-2	10.4	...	-1	0	-5	-15
6	15.8	1	11.9	..	-2	2	-1	-9
7	16.8	3	12.6	.	-1	3	1	-6
8	17 6	6	13 3	.	1	6	3	-4
9	17.7	8	13.6	...	6	8	4	-4
10	16.1	10	12.8	-39	10	8	1	-9
11	14.4	12	11.4	-19	12	5	-4	-19
12	13.1	15	10.4	-2	13	2	-10	-29
13	12.3	18	9.8	10	13	-1	-16	-38
14	11.4	21	9.0	21	12	-6	-25	...
15	10.6	25	8.4	31	9	-13	-35	...
16	10.3	27	8.1	35	8	-17	...	...
17	10.0	28	7.8	38	6	-20	...	..
18	9.1	29	7.1	36	0	-31	. .	.
19	7.9	30	6.1	33	-12	. .	. .	.
20	8.3	30	6.4	34	-8	. .	.	.
21	8.7	31	6.7	36	0	-32	.	
22	9.1	21	7.0	21	2	-22	...	...
23	9.3	10	6.6	2	0	-20	...	. .
24	8.7	0	6.3	-12	-1	-19	-39	...

VK SOUTH — EUROPE

UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9
1	9.3	2	6.6	-13	0	-16	-34	...
2	8.7	-7	6.3	-24	-1	-15	-31	...
3	9.8	-8	7.1	-39	0	-8	-21	...
4	12.2	-3	8.3	...	0	-2	-9	-23
5	15.1	0	11.2	...	-1	2	-2	-10
6	17.2	2	12.7	...	-3	3	1	-5
7	18.1	4	13.4	. .	-3	4	3	-2
8	18.6	5	14.0	. .	-2	5	4	-1
9	17 0	5	13.6	...	1	5	2	-5
10	15.0	5	11.9	...	4	4	-2	-13
11	13.2	6	10.4	-35	6	1	-8	-24
12	11.4	8	9.0	-16	6	-5	-19	...
13	10.1	12	8.0	1	4	-14	-33	..
14	9.5	17	7.5	14	2	-21	...	...
15	9.1	24	7.2	27	-1	-30	...	...
16	8.9	27	7.1	32	-2	-33	...	...
17	9.1	28	7.1	36	0	-32	...	...
18	9.1	29	7.1	36	-1	-32	...	...
19	8.5	29	6.6	35	-6	...	...	...
20	8.0	29	6.1	33	-12	...	. .	...
21	8.5	29	6.5	35	-6	..	. .	...
22	10 3	28	7.4	37	9	-16	. .	. .
23	8.8	20	6.8	20	-1	-27	. .	...
24	9.6	12	6.7	3	2	-17	-38	..

VK WEST — EUROPE

UTC	MUF	dBU	FOT	7.1	14.2	18.1	21 2	24 9
1	9.8	13	6.9	7	2	-19	.	.
2	9.2	3	6 5	-9	-2	-20	. .	.
3	10.2	-1	7 4	-27	0	-11	-26	...
4	12.9	1	8 7	..	2	-2	-10	-25
5	16.1	3	11.8	.	1	3	-1	-10
6	18.3	4	13 4	. .	0	4	2	-4
7	19.3	5	14.2	.	-1	5	4	-1
8	20.1	6	14.8	..	-1	6	5	0
9	20.5	6	15.3	...	0	6	6	1
10	18.9	6	15.2	. .	3	7	4	-2
11	17.1	7	14.4	. .	7	7	2	-8
12	15.4	10	12.2	-29	10	6	-2	-16
13	13.6	13	10.8	-6	12	2	-10	-29
14	12.3	17	9.8	11	12	-3	-19	...
15	11.6	21	9.2	25	12	-8	-27	...
16	10.9	24	8.6	31	9	-14	-37	...
17	10.3	26	8.2	35	6	-20	...	...
18	10.2	27	8.0	38	5	-22	.	. .
19	10.0	27	7.8	38	4	-24	...	. .
20	9.1	28	7.1	36	-2	-34		. .
21	8.1	29	6.2	33	-13	..		. .
22	8.6	28	6.6	34	-8	..	.	. .
23	8.9	29	6.9	36	-3	-35		. .
24	9.1	22	7.0	25	-1	-29		..

VK EAST — EUROPE (long path)

UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9
1	10.0	4	6.7	-15	3	-9	-24	...
2	9.6	6	6.5	-7	3	-12	-29	...
3	9.0	9	6.2	1	1	-17	-36	...
4	8.8	14	6.1	10	0	-21	...	...
5	8.4	23	5.9	24	-2	-29	. .	...
6	9.4	23	6.8	24	4	-19	. .	. .
7	11.7	24	8.5	30	15	-2	-20	. .
8	12.0	23	9.3	23	17	2	-12	-32
9	9.3	14	7.1	7	5	-12	-30	...
10	9.0	4	6.9	-8	3	-11	-27	...
11	9.5	-1	7.5	-22	1	-10	-25	...
12	9.0	-10	7.1	-31	0	-10	-23	...
13	8.8	-15	7.0	-38	0	-8	-20	-38
14	8.9	-19	7.0	...	-1	-8	-18	-35
15	8.9	-28	6 9	.	-6	-12	-22	. .
16	8.4	..	6.4	.	-14	-21	-34	. .
17	7.9	..	6.0	.	-21	-30	.	. .
18	8.4	...	6.4	.	-13	-20	-32	. .
19	10 3	-14	8.1	.	-1	-4	-12	-25
20	13.4	-3	10.2	...	-1	0	-5	-15
21	14.4	0	9.7	...	0	1	-3	-13
22	12.7	0	8.6	...	2	0	-8	-21
23	11.5	1	7.■	-35	3	-3	-13	-29
24	10.7	2	7.2	-24	4	-6	-18	-37

VK SOUTH — EUROPE (long path)

UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9
1	9.2	-1	6.3	-17	0	-14	-30	...
2	8.6	3	6.0	-6	-2	-20	..	..
3	8.2	6	5.7	2	-4	-27	...	...
4	8.0	12	5.7	10	-7	-33	...	...
5	7.7	21	5.6	22	-11	...	...	. .
6	8.8	21	6.4	23	-2	-30	...	...
7	10.7	23	7.9	29	9	-12	-32	. .
8	12.9	22	9.0	29	18	2	-13	-34
9	11.2	18	7.8	15	10	-7	-25	...
10	8.7	10	6.7	4	0	-20	...	...
11	8.9	3	6.2	-8	0	-17	-35	..
12	8 6	-4	5.9	-18	-1	-16	-33	...
13	8.3	-12	5.8	-26	-1	-13	-28	...
14	8.3	-21	5.7	-38	-4	-14	-28	...
15	8.2	-39	5.8	...	-12	-22	-37	...
16	7.9	...	5.6	...	-22	-33	...	...
17	7.7	..	5.5	...	-30	...	...	...
18	8.3	...	6.1	...	-22	-30	...	...
19	9.9	-22	6.8	...	-5	-9	-18	-33
20	12.5	-7	9.2	..	-2	-2	-7	-18
21	13.2	-4	9.2	..	-2	-1	-6	-16
22	11.7	-6	8.1	..	0	-3	-10	-23
23	10.6	-5	7.3	...	0	-5	-16	-32
24	9.7	-4	6.7	-29	0	-9	-23	...

VK WEST — EUROPE (long path)

UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9
1	8 8	-11	6.1	-29	-3	-14	-28	..
2	8.2	-10	5 8	-21	-4	-19	-36...	
3	7.8	-7	5.5	-12	-6	-25	...	..
4	7.6	-3	5 5	-7	-8	-29	. .	.
5	7.5	1	5 4	0	-10	-35	.	.
6	8.5	7	6 2	3	-5	-28	.	. .
7	10.2	12	7 7	7	3	-15	-33	. .
8	12.4	15	9.3	9	11	-3	-17	-37
9	14.2	15	10.6	8	15	4	-7	-24
10	12.7	13	8.7	3	10	-1	-14	-33
11	10.1	6	7.5	-9	3	-10	-25	...
12	8.9	-4	6.5	-20	-1	-14	-29	...
13	8.9	-9	6.0	-28	-2	-14	-28	...
14	8.5	-17	5.7	-34	-3	-13	-26	...
15	8 2	-36	5 6	. .	-12	-21	-35	. .
16	8 2	.	5.6	. .	-18	-27	.	. .
17	8.1	.	5.6	.	-24	-32		..
18	7.8	..	5.5	.	-30	-39	.	. .
19	7.5	.	5.3	.	-34	..	.	. .
20	8.2	...	5.9	...	-23	-31	.	. .
21	9.7	-22	6.5	...	-6	-10	-18	-33
22	11.3	-11	7.9	..	-4	-5	-12	-25
23	10.2	-14	7.1	...	-3	-7	-16	-31
24	9.3	-14	6.5	...	-2	-10	-22	...

VK EAST — MEDITERRANEAN

UTC	MUF	dBU	FOT	7.1	14 2	18.1	21.2	24.9
1	9.1	-2	7.0	-21	0	-14	-31	...
2	9.9	-5	7.5	-36	0	-9	-22	...
3	13.9	1	10.5	. .	2	1	-5	-17
4	18.9	6	14.5	...	0	6	4	-1
5	22.0	7	17.2	...	-2	7	7	4
6	22.0	6	18.0	...	-2	6	7	3
7	21.2	6	17.2	...	-1	6	6	2
8	19.6	6	15.7	...	1	6	5	-1
9	17.7	7	14.9	. .	4	7	3	-5
10	16.0	9	12.7	. .	8	6	0	-11
11	14.1	10	11.2	-23	10	4	-6	-21
12	12.8	13	10.1	-5	11	0	-13	-32
13	12.1	19	9.6	14	13	-2	-19	..
14	11.2	24	8.9	31	13	-8	-28	..
15	10.6	26	8.5	35	10	-13	-36	.
16	10.4	28	8.2	38	10	-15	-39	.
17	10.2	29	8.0	39	8	-17	.	..
18	9.4	30	7.2	38	2	-27	..	. .
19	8.2	30	6.3	35	-7	...	..	. .
20	8.7	30	6.7	36	-3	-35	...	...
21	11.6	28	9.1	41	16	-6	-26	...
22	10.7	25	8.3	29	11	-9	-30	...
23	9.5	15	7.3	10	3	-17	-38	...
24	10.7	10	8.2	-7	6	-8	-24	. .

VK SOUTH — MEDITERRANEAN

UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24 9
1	9.0	4	6.9	-9	0	-18	-37	...
2	9.7	-1	7.4	-25	1	-11	-27	...
3	14.0	3	11.0	...	4	1	-5	-18
4	19.3	7	14.9	.	2	7	5	0
5	20.2	6	16.9	..	-1	6	5	0
6	20.3	5	16.8	.	-2	5	5	0
7	19.9	5	16.3	..	-2	5	4	0
8	19.3	5	15.6	.	0	5	4	-1
9	17.6	6	14.1	...	2	5	2	-5
10	15.6	6	12.3	..	5	4	-2	-13
11	13.7	7	10.8	-33	7	1	-8	-24
12	11.8	9	9.3	-12	7	-5	-20	..
13	10.4	14	8.2	6	4	-14	-34	...
14	9.8	20	7.7	21	2	-22	...	...
15	9.3	24	7.3	28	0	-29	...	...
16	9.1	26	7.2	32	-1	-32	..	...
17	9.3	28	7.3	36	0	-31	...	...
18	9.3	28	7.2	37	0	-31	...	..
19	8.7	29	6.7	35	-5	-39	...	...
20	8 2	29	6.2	34	-11	. .	.	..
21	8.8	29	6.6	36	-4	-38	.	...
22	9.7	29	7.5	38	6	-21	.	...
23	9.5	22	7.3	23	3	-22	.	...
24	10.8	16	8.4	8	9	-8	-26	...

VK WEST — MEDITERRANEAN

UTC	MUF	dBU	FOT	7.1	14 2	18.1	21 2	24 9
1	8.4	12	6.4	9	-6	-34	.	.
2	9.0	4	6.9	-6	-2	-23	.	.
3	12.8	6	10 1	-30	5	-2	-13	-31
4	17.5	7	13 5	.	6	7	2	-7
5	19.4	7	14 7	. .	4	7	5	-2
6	19 5	6	16 3	.	2	6	4	-2
7	19.5	6	16.1	..	1	6	4	-2
8	19.3	6	15.8	.	2	6	4	-3
9	18.6	6	15.1	..	3	6	3	-5
10	17.1	6	13.7	..	5	5	0	-9
11	15.3	7	13 0	-38	8	4	-4	-18
12	13.7	10	10 9	-16	9	0	-11	-29
13	12.0	14	9.5	5	9	-7	-24	. .
14	10.8	19	8.6	21	6	-16	-38	. .
15	10.2	23	8 1	30	4	-22	.	.
16	9.6	25	7.6	33	0	-30	...	...
17	9.3	27	7.4	35	-2	-35	..	...
18	9.3	28	7.3	37	-2	-35	...	...
19	9.2	28	7.2	37	-3	-37	...	...
20	8.5	28	6.6	35	-11	...		. .
21	7.6	29	5.9	32	-21	.	.	. .
22	8.1	29	6.2	33	-15	.	.	. .
23	9.7	28	7.5	38	3	-26	.	.
24	8.8	23	6.8	27	-4	-35		.

VK EAST — USA/CARIBBEAN

UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9
1	22.7	9	19.1	...	5	11	10	5
2	20.5	10	16.3	...	10	12	9	3
3	17.2	12	13.7	-32	13	11	4	-6
4	14.7	15	11.7	-8	15	7	-2	-18
5	13.4	19	10.6	12	17	4	-9	-28
6	12.6	24	10.0	30	19	2	-14	-38
7	12.0	26	9.5	36	17	-1	-20	...
8	11.6	28	9.1	39	16	-4	-24	...
9	11.1	29	8.6	41	14	-8	-29	...
10	10.3	30	8.0	40	10	-15	-38	...
11	9.2	30	7.1	38	3	-26	...	...
12	10.1	30	7.7	40	9	-16	...	...
13	10.8	28	8.5	40	11	-13	-36	...
14	9.0	25	7.0	28	1	-27	...	...
15	9.2	18	7.1	15	1	-22	...	...
16	9 2	8	7.1	-1	0	-21	...	...
17	8.0	-4	6.1	-12	-6	-26	...	...
18	8.4	-9	6.4	-23	-3	-19	-38	...
19	11.4	-3	8.7	. .	0	-6	-16	-33
20	16.0	3	12.3	...	0	2	-2	-11
21	19.3	5	15.1	...	-1	5	3	-2
22	20.8	5	16 7	...	-2	5	5	1
23	21.5	6	17.5	...	-1	6	6	2
24	22.0	7	18 2	...	0	8	7	3

VK SOUTH — USA/CARIBBEAN

UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9
1	20.6	9	15.4	...	5	10	8	2
2	20.6	11	17.3	...	10	13	10	3
3	18.3	13	14.5	-29	15	13	8	-1
4	15.5	16	12.3	-6	17	10	1	-13
5	14.1	20	11.2	14	19	8	-4	-22
6	13.2	24	10.4	32	21	5	-9	-31
7	12.6	26	10.0	37	20	3	-14	-37
8	12.2	28	9.6	41	19	0	-17	...
9	11.7	28	9.1	41	17	-3	-23	.
10	10.6	28	8.3	40	10	-14	-38	..
11	9.4	30	7.2	38	5	-23	...	...
12	9.5	29	7.5	38	3	-26	..	.
13	9.4	29	7.4	37	2	-28	..	.
14	9.5	24	7.5	28	3	-24	...	...
15	9.5	17	7.4	14	1	-21	..	...
16	8.9	6	6.8	-3	-2	-23	...	...
17	8.3	-3	6.3	-14	-4	-23	..	...
18	8.8	-7	6.7	-26	-2	-16	-33	..
19	10.9	-4	8 6	.	0	-7	-18	-36
20	14.4	1	11.0	..	0	0	-5	-16
21	17.2	3	13.4	...	-1	3	0	-6
22	18.8	4	15.0	...	-2	4	3	-2
23	19.8	5	16.1	...	-1	5	4	0
24	20 1	6	16.6	...	0	7	6	0

VK WEST — USA/CARIBBEAN

UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9
1	19.5	7	15.8	...	0	7	6	1
2	19.6	9	16.0	.	3	9	7	2
3	17.0	9	13.5	.	7	9	5	-3
4	14.6	10	11.6	-39	10	7	0	-12
5	13.3	13	10.5	-19	12	5	-5	-20
6	12.5	16	9.9	-1	14	3	-9	-28
7	11.8	22	9.4	17	16	1	-15	-38
8	11.5	27	9.0	32	17	1	-19	.
9	11.0	29	8.5	37	16	-4	-25	...
10	10.2	31	7.9	40	13	-10	-33	. .
11	9 3	32	7.1	39	7	-20	.	.
12	10 2	31	7.8	41	12	-12	-35	...
13	9.9	31	7.8	40	9	-17	...	. .
14	9.4	27	7.4	31	5	-21	.	.
15	9.3	20	7.4	18	4	-19	.	..
16	9.3	13	7.2	5	4	-15	-35	.
17	9.5	6	7.4	-10	3	-12	-30	..
18	8.9	-3	6.8	-21	1	-13	-30	..
19	8.2	-12	6.3	-26	0	-13	-29	
20	8.7	-14	6.6	-36	1	-9	-22	
21	10.9	-8	8.6		1	-3	-11	-26
22	14.4	0	11.0		-1	2	-2	-11
23	17.1	3	13.4	.	-3	3	2	-4
24	18.6	5	14.8	...	-3	4	4	-1

HAMADS

TRADE ADS

● AMIDON FERROMAGNETIC CORES: For all RF applications. Send business size SASE for data/price to RJ & US Imports, PO Box 431, Kiama NSW 2533 (no enquiries at office please ... 14 Boanyo Ave Kiama). Agencies at: Geoff Wood Electronics, Sydney: Webb Electronics, Albury: Assoc TV Service, Hobart: Truscotts Electronic World, Melbourne and Mildura: Alpha Tango Products, Perth.

● WEATHER FAX programs for IBM XT/ATs *** "RADFAX2" $35.00, is a high resolution shortwave weatherfax, Morse and RTTY receiving program. Suitable for CGA, EGA, VGA and Hercules cards (state which). Needs SSB HF radio and RADFAX decoder. *** "SATFAX" $45.00, is a NOAA, Meteor and GMS weather satellite picture receiving program. Needs EGA or VGA & WEATHER FAX PC card, plus 137 MHz Receiver. *** "MAXISAT" $75.00 is similar to SATFAX but needs 2 Mb of expanded memory (EMS 3.6 or 4.0) and 1024 x 768 SVGA card. All programs are on 5.25" or 3.5" disks (state which) plus documentation, add $3.00 postage. ONLY from M Delahuntly, 42 Villiers St, New Farm QLD 4005. Ph (07) 358 2785.

● HAM LOG v.3.1 — Acclaimed internationally as the best IBM logging program. Review samples....AR: "Recommend it to anyone"; The Canadian Amateur: "Beyond this reviewer's ability to do it justice. I cannot find anything to improve on. A breakthrough of computer technology". ARA: "Brilliant". Simple to use with full help, the professional HAM LOG is immensely popular (now in its 5th year), with many useful, superb features. Just $59 (plus $5 P & P), with a 90 page manual. Special 5 hour Internet offer. Demos, brochures available. Robin Gandevia VK2VN (02) 369 2008 BH fax (02) 369 3069. Internet address rhg@ozemail.com.au.

FOR SALE ACT

● KENWOOD TS530S s/n 1121013, SSB filter, hand mic, serv man, op man, orig carton, matching AT230 ant tuning unit s/n 2010766, serv man, op man, orig carton. Both exc condition, $750 the pair, ono. Stirling VK1EV QTHR (06) 258 8023.

● MORSE OSCILLATOR MFJ557 as new, complete with Morse key, earphone jack, volume and tone control $70. Ernest VK2KYA (02) 771 2561 AH or (02) 906 2628 BH.

● YAESU FT901D complete station, FT901D YO-901 multiscope, FV901DM VFO, FC901 500 W ATU, SP901 speaker, all exc, sell as complete package, $1,300.00 no offers. Tex VK1TX (06) 296 2508 or (018) 48 1130.

FOR SALE NSW

● YAESU FT101ZD, mic, workshop manual, handbook, WARC bands, good order $350. David VK2BDT Goulburn (048) 21 5036.

● ICOM power supply IC PS-15, $300, in A1 order, new $615. Peter VK2FFA (043) 24 4160.

● FORD TRANSIT M/home, 1976 Starcraft, hand throttle, 2 spare wheels, excel cond, two batts, 88 k km, $9,500.00 ono. Suit licensed radio amateur. A J Brown VK2IK QTHR (02) 876 1465.

● HF BEAM, three element triband, 10-15-20 metres, little use, like new, $420; COMMUNICATION receiver Realistic DX-200, AM SSB CW, $120. Chris Tsoutis VK2GCT (02) 681 5772.

● POWER SUPPLY 13.8 V 25-30 A, fully regulated, "new" and over voltage protection, sell or exchange ham gear. S Marshall VK2KST QTHR (066) 72 2462.

● YAESU FT747GX txcvr s/n 91200267, HTX100 10 mtr mobile txcvr, b/new, 22 amp power supply, SX 200 Swr & Pwr, Kenrotor KR-400 RC, Chirnside CE42 15x10 4 element Yagi, Addonis c/mike desk, CX201 c/axial switch, lots more, all mint condition, $1,700.00. M Brooke VK2VMB QTHR (065) 68 6754.

● YAESU FT101B transceiver s/n 83N304018, good condition including 27 and 10 MHz, AC/DC operation with ext VFO, FV101 cw filter, handbook, spare valves, $600. Karl VK2KM (063) 55 2671.

● KAYPRO portable computer, 10 Mb hard drive, ideal for logging, $150 or offer. Bill VK2WS QTHR (067) 75 2158.

● KENWOOD TR-751A all mode 2 metre transceiver s/n 7050240 with manual, in mint condition $850. John VK2ATU (02) 792 2275.

● FREE FOR THE TAKING, 18AVQ all band HF vertical, 5 metres length. Partially disassembled, moved to flat thus surplus. Duane Foster VK2VE (02) 818 5946.

● YAESU FT901DM (with 30 metres) HF transceiver, YD148 desk microphone, manual and original packing for shipment, $600. Barry VK2AAB (02) 487 1428.

FOR SALE VIC

● TO GIVE TO A young Novice. Forty odd Amateur Radio magazines dated from mid 1970s. Will send COD or can collect from Elwood VIC. Glen (03) 9531 9301.

● ICOM 271A with pre/amp, $950; ICOM 735 HF, $950; TOWER 50ft windup, $50; MFJ 949D tuner, $250; MFJ 1701 SWT $50; ELECTROPHONE CB with ant, $200. Ken VK3WAL (051) 52 3984.

● ROTATOR KR-400 complete and in good condition, $400. Freight paid. Gilbert VK3CQ QTHR (057) 50 1158 BH.

● NALLY tower dismantled, ready to replant, $1,400. Ted VK3TG (015) 67 4887.

● ICOM 735 transceiver s/n 01783, keyer option, mike, service manuals, $980; YAESU antenna tuner FC707, $220; HEADSET, keyer, Shinwa LPF, Hokushin HS- HF5 5 band trap vertical, $190 the lot or $1,250 the whole lot. Hartmut VK3DYD QTHR (03) 9555 6714.

● KENWOOD QR-666 communications receiver, $100. Ian VK3IAN (059) 82 2323.

● GREEN SCREEN monitor 30 cm (12") gc, $45; TET-EMTRON TE23M minibeam 10-15-20, $275 (list $495); SABTRONICS Dig MM (req 6 V DC), $20. Andrew Roudie VK3UJ, 24 Vista Dve, Chirnside Park Vic.

● YAESU FT290R all mode (AM FM SSB) 2 metre transceiver with LCD display, dual VFOs, 8 memories, nicad batteries, microphone, carry case, manual and original carton. As new condition, $375. Chris VK3KCP (03) 9629 2653.

● RTTY repeater, complete including 2 metre Philips FM828 transceiver and 240 V power supply. Professional RTTY controller, rack mounted, complete set of service manuals. Excellent condition. David VK3KAB (03) 9808 4035 AH.

● OSCILLOSCOPE Tektronix model 535A, dual beam, c/w trolley, type CA plug in and type B plug in preamps, handbooks, and Tektronix probe. Partly restored and in excellent order, $300 or near offer; AUDIO AMPLIFIER Leak Variscope 2, valve type, 20 watt stereo and preamp new condition, $200 or near offer. Ric VK3RC QTHR (057) 99 1388.

● EDDYSTONE 1990R VHF/UHF receiver, workshop manual, $550; TEKTRONIX 564 dual beam storage cro, many plug-ins, probes, includes all manuals, $300; ICOM IC-729 HF & 6 m all mode transceiver, $1,600. Chas VK3BRZ (052) 25 0937 BH or (052) 82 3167 AH.

● FM828 Eband FM radios suitable for conversion to 6 metres, local or remote control, Mk1s, $30, Mk2s, $40 inc. p&p; ATV transmitter (Rider design) on 576 MHz, suit conversion to 70 cm, 2C39 final, $250 ono. Geelong Amateur Radio Club, PO Box 520, Geelong Vic 3220 or Lee VK3PK (052) 50 1105.

● HY-GAIN TH3 with instruction booklet, coax and balun, $120; DAIWA SWR & power meter, $65; DAIWA new antenna switch $60. Selection of Morse keys and baluns, cheap coax. Ken VK3TL Montrose (03) 9728 5350.

● ICOM IC735 s/n 3152, PS-15 s/n 11313, ICSP3, $1,450; ICOM auto ant tuner IC-AT500 s/n 3671, $450; HEATHKIT kW HF amp HA14, PSU HP24, $420; ICOM IC27A 2 m, $390; ICOM IC22S, MDRC freq sel & display, $200; PAKRATT PK232, $20 Nally tower, wind up/tilt with tri-band & Ham-M, offer; MODEM MAESTRO 2400ZXR, $40. Maxwell VK3BAX QTHR (052) 29 7401.

● PLESSEY PR155 0.5-30 MHz prof solid-state Rx with manual, $190; EDDYSTONE 770 Rx 19-165 MHz with manual, $60; COMMAND Rx BC453 190-550 KHz & BC454 3- 6 MHz, $10 ea; RACK-MOUNTED 144 MHz AM Tx, QQE06/40 final, power supplies, etc, triple 19" rack, 2.3 m high, 3 cm tail-end radar ex Canberra bomber; 2.7 m dia dish (ex Telecom); self supporting steel tower, 10 m (33") high; parts, valves, etc, SASE for list, offers invited. Ian ex VK3ZAM (03) 9729 4359.

● ICOM IC28A 2 m transceiver, 25 w, mic, manual, mobile mount, cables, ec, $395 ono; KENWOOD TM241A, 50 W, 2 m transceiver, as new, $495 ono; KENWOOD TS930S HF transceiver, ec, $1495 ono; IRC 2.1 kHz narrow SSB filter set (8 MHz and 455 kHz), suit Kenwood TS850/930/940/950, $215 ono; KENWOOD SP820 spkr, filters, ec, $100 ono; YAESU FP300 20 A PSU, vgc, $295 ono; YAESU RS series mobile whips, 80, 40, 20 and 2 m, $100 ono; GM270 2 m/70 cm "on glass" mobile ant, brand new, unused, $90; BENCHER non-iambic key, vgc, $90 ono. Bill VK3BR, QTHR, (03) 9584 9512.

FOR SALE QLD

● YAESU 707 HF SSB base or mobile station comprising FT707 transceiver s/n 2E230089, FP707 power supply s/n 1I130580, FC707 antenna tuner s/n 2F190309 WARC bands, all manuals, perfect condition, $900 the lot. Brian VK4YBW QTHR (07) 3816 0714.

● PK232MBX multimode TNC including Pactor/fax, Pakratt2 and Pakratt-for- Windows software, manuals and mods/cct diagrams, vgc, $550 the lot, user upgrading. Frank VK4DFM (071) 29 4311.

● KENWOOD MC-43S microphone with up-down switch, brand new, $70. C King VK4OZ QTHR (07) 5532 4078.

● YAESU YP-150 dummy-load watt-meter, 150 W, vgc, $100. Ron VK4AJV (071) 62 3445 anytime.

● VALVES FOR amateurs restorers collectors, octals, novals, QRP rigs, transmitters, sockets, shields, 807, 6146, 12BY7, 5 stars, rectifiers, regulators, all tested. Reduced prices. Send 9" x 4" SASE for list. Ted VK4YG PO Box 245, Ravenshoe Qld 4872 or (070) 97 6387.

● SWAN 350 txcvr inc vox and manual, all vgc. Doc VK4CMY (076) 85 2167.

● PK232MBX MULTI mode controller, includes phase mod board for satellite operation, latest software cables, etc, s/n 37025, $600 ono. Jim VK4BS QTHR (073) 286 4730.

● KENWOOD TS140S (10-30 MHz) transceiver, $1,100; KENWOOD SP430 matching speaker, $100; AMERITRON AL811H amplifier, $1,800; ICOM 701 transceiver (10-30 MHz), $500; ICOM IC701PS matching power supply and speaker, $300; MFJ VERSA tuner III 1.5 kilowatt MFJ962C, $600; MFJ815B SWR/watt meter peak reading, $200; TRIO 15 MHz Oscilloscope CS1560AII, $300; GME electrophone, 35 amp power supply, $500; ICOM 28A VHF transceiver 5-25 watts, $600; ICOM SM8 desk mike, $400; EMTRONIC HB35C tribander, 10-15-20 bands, $600; FREE STANDING 45" tower, hot dip gal, 4 leg, $2,000; KR400 Rotator (adapted to tower, top sleeve only), $900; MFJ Power board 1118 with meter, $400; MC60 Desk mike adapted to a boom or moving arm, $200. All equipment in good order. Neil VK4ANF (07) 201 0956 AH.

FOR SALE WA

● TS440S/AT, $1,600; IC735, $1,000; FT301S, $200; FTV650 and PSU, $200; TS130V, $250; HF linear amp 150 W, $150; TWO 500 MHz frequency counters, $50 each. Elliot VK6ELL QTHR (09) 364 5297.

WANTED NSW

● PHILIPS FM828 UHF U band. Ken VK2SX (02) 413 1846.

● ICOM 271 and Yaesu FT290R. Ian VK2MW QTHR (02) 44 4985.

● TECHNICAL manual for Collins transceiver model 618T and connecting cables for same. All costs paid. Peter VK2CPK QTHR (02) 605 4790 or (02) 689 2417.

● KENWOOD TM-733A, good quality antenna and down converters for 1.2 and 2.4 GHz, Drake PS-7 power supply (working or not), Collins SM-1 or SM-2 mike, four new 811 valves. Tom VK2OE (046) 26 2631 evenings.

WANTED VIC

● TYPE BC 375E aerial tuning unit — ex US wartime equipment, required for restoration project. Ric VK3RC QTHR (057) 99 1388.

● SAILORS communication receiver R1120, purchase or swap, have some Sailor R1121 telex/SSB scanning HF receivers available. Ian VK3IAN (059) 82 2323.

● ANY INFORMATION Philips FM321 70 cm FM transceiver, circuit diagram, channel allocation, etc. Ray VK3FQ QTHR (054) 36 8301.

● MARC RX info req re DIN plug, Rx covers LF to SHF in 12 bands; also wanted antenna TH3M3 or similar, eg Cushcraft or Telrex, etc. Pick up within VK3 if cheap. Jim VK3YJ QTHR (03) 9315 9387.

● HUB FOR triband quad similar to VK3ASC design in Amateur Radio March 1970. Also Microphone for IC2A hand-held 2 m transceiver. David VK3ANP QTHR (057) 27 6210.

● BC348RX, good price for a good unit, will trade/sell manuals for AT5/AR8, RA17, R390, SCR522, AR88, etc. Peter VK3IZ 1585 Kinglake Rd, St Andrews VIC 3761 or (03) 9710 1153.

WANTED QLD

● 250 W dummy-load Bird model 43 wattmeter, must be vgc. Ron VK4AJV (071) 62 3445 anytime.

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● 70 CM SSB Transceiver. Bill VK4YWY (07) 3285 1462.
● TENTEC speech processor, model 123. Henry VK4CQH QTHR (070) 92 1994.

WANTED SA

● COPY OF Circuit and alignment details for Gonset GSB-100 TX, costs covered. Also WW2 ATR2-B circuit or info valve RX wanted. SKY RAIDER made by Craven Wylde Sydney in 1940 or similar RX. A Gluis VK5AAQ QTHR (08) 322 1010.

WANTED WA

● HANDBOOK for AWA communications receiver type CR-6 series C60600, or good photocopy, will pay fair costs. John VK6XJ QTHR (09) 295 3333.
● SOFTWARE for C64 to suit ETI 755 RTTY modem, also ETI 733 decoder. Costs reimbursed with thanks. Terry VK6NTJ QTHR.
● HANDBOOK and/or circuit diagram for GEC communications receiver type BRT400 or BRT402, made in England in early 1960's. Will pay fair price. John VK6XJ QTHR (09) 295 3333. Please help if you can.

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VK4	GPO Box 638 Brisbane Qld 4001
VK5	PO Box 10092 Gouger Street Adelaide SA 5001
VK6	GPO Box F319 Perth WA 6001
VK7	GPO Box 371D Hobart Tas 7001
VK8	C/o H G Andersson VK8HA Box 619 Humpty Doo NT 0836
VK9/VK0	C/o Neil Penfold VK6NE 2 Moss Court Kingsley WA 6026

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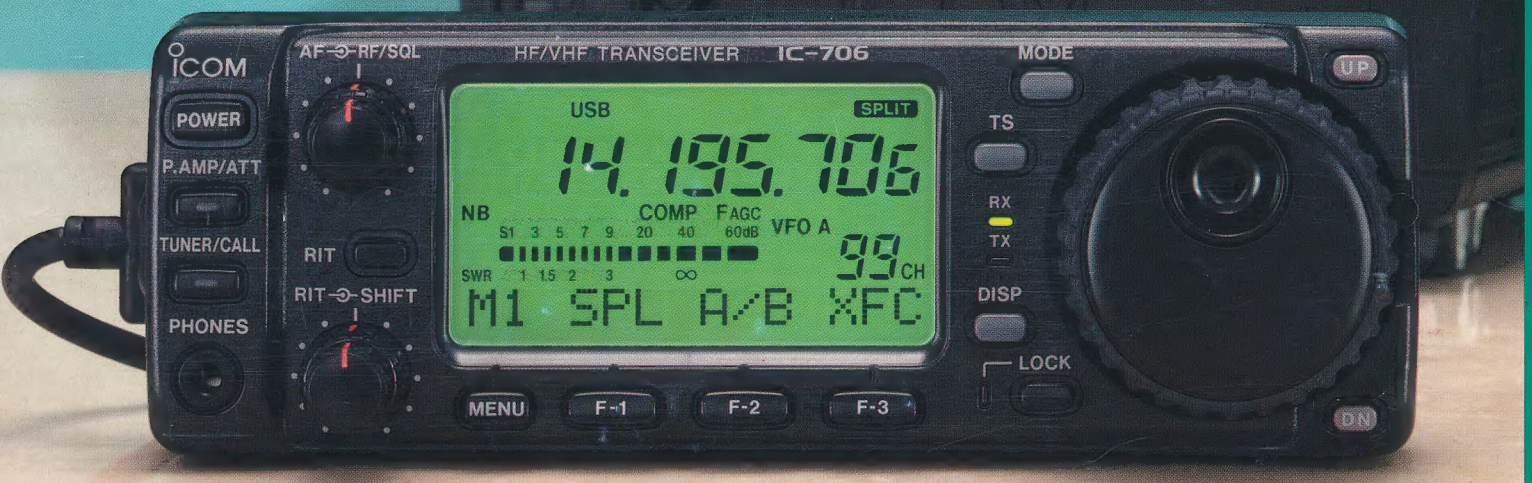

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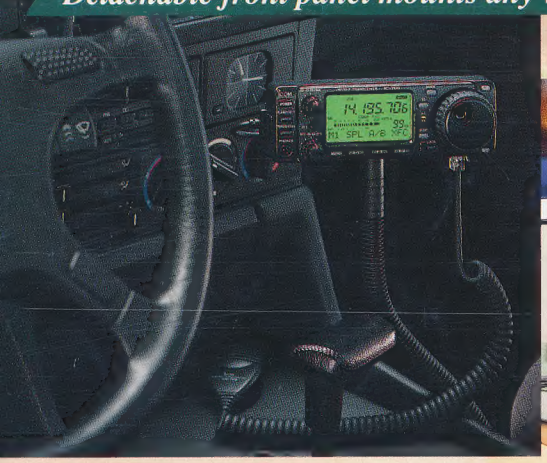

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